A. A. R. Mechanical Division Report Number

JULY 28, 1945

Railway Age

Founded in 1856

THE LIBRARY OF CONGRESS

per

IT'S A GREAT NEW DAY FOR RAILROADING

BETTER TIME and ON TIME

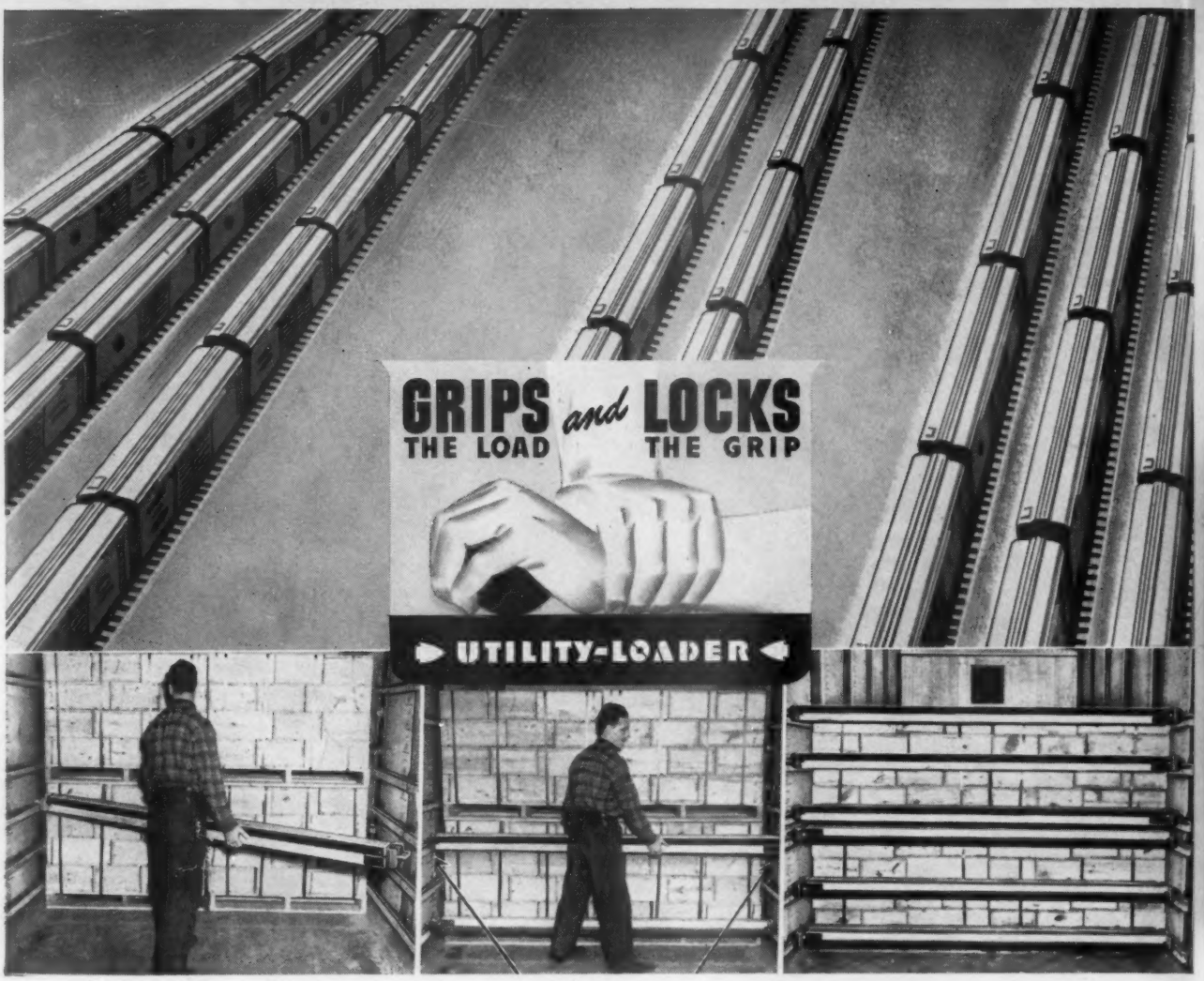
The higher speeds and more precise schedules that are possible with General Motors Diesel freight locomotives help the railroads get *more* business and hold present tonnage in a competitive world.

★

ON TO FINAL VICTORY
BUY MORE WAR BONDS

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION · LA GRANGE, ILL.



Get ⅓ More Pay-Load
Use ⅓ Less Box Cars

The Evans general purpose Utility Loader permits the loading of any box car with any size, shape, weight or class of freight from floor-to-roof and from end-to-end. This will give you ⅓ more pay-load per car. ⅓ more pay-load means, of course, that ⅓ fewer cars are needed to carry the same amount of cargo.

Write for a copy of the Evans Manual today. It illustrates the manifold advantages of general purpose Utility Loader grip-locked loads to shipper, carrier and consignee alike.

UL FOR THE GOOD OF THE RAILROADS

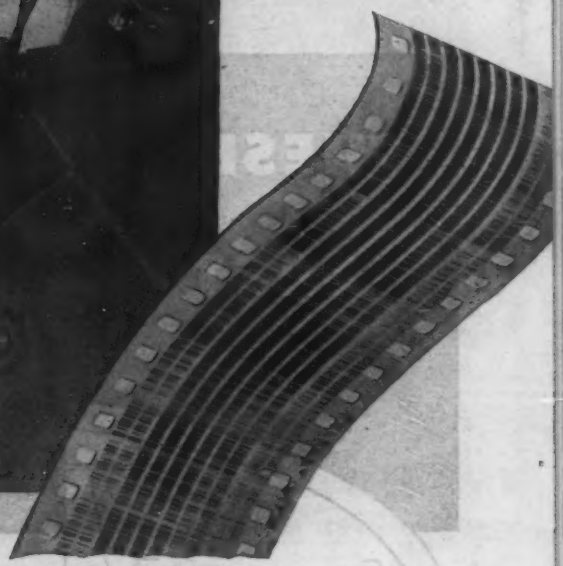
EVANS DETROIT PLANT FLIES ARMY-NAVY "E" PENNANT

EVANS PRODUCTS COMPANY
DETROIT 27, MICHIGAN

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 119, No. 4.

Examination of the spectrum emanating from the vaporization of the steel sample in an electric arc quickly reveals the chemical content of the sample.

A spectrographic film provides a permanent record of each sample.



How the Spectrograph Helps Maintain Inland Quality

Every open hearth heat run at the Inland mills is checked not only by routine control methods of chemical analysis, but also in a special spectrographic laboratory.

Inland was one of the first steel mills in America to install and develop technique for using the spectrograph in control of quality. An important advantage of this method is the rapidity with which tests can be made. At any stage during the working of a heat a melter can have an accurate check on the chemical content within ten minutes after a sample is delivered to the laboratory. Not only do these frequent and rapid tests assure the uniform high quality of Inland steel, but they also help maintain capacity production—a vital necessity in this time of war.

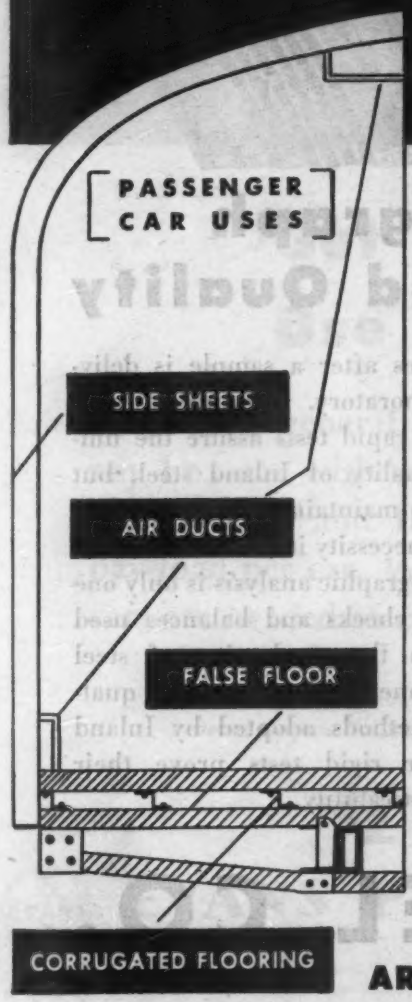
The spectrographic analysis is only one of the many checks and balances used by Inland in the production of steel—it is only one of the numerous quality control methods adopted by Inland after rigid tests prove their practicability.

INLAND STEEL CO.

38 S. Dearborn St., Chicago 3, Ill.

Sales Offices: Cincinnati • Detroit • Indianapolis • Kansas City • Milwaukee • New York • St. Louis • St. Paul

THESE VITAL PARTS LAST LONGER WHEN YOU GET "*Triple Protection*"



There's a ready answer to costly rust-problems for the new car roofing, flooring, siding and ductwork jobs in your shops.

It is ARMCO ZINCGRIP with the Bonderized PAINTGRIP surface treatment — the special sheet steel that assures *triple protection* for car parts constantly exposed to corrosive attack.

WHAT IS THIS TRIPLE PROTECTION?

First, a special full-weight zinc coating that clings to the steel *even in severe forming and drawing* operations. Second, the Armco mill-Bonderized treatment; third, the paint finish that adheres to the PAINTGRIP surface much longer than paint on ordinary galvanized or sand-blasted steel.

There is no direct contact of paint with zinc. The neutral Bonderized surface helps preserve the oils that keep paint soft and flexible—prevents early peeling and flaking.

Bonderizing makes the surface ready for *immediate painting*. No acid etching or other pre-treatments are needed. Paint goes on easily and smoothly.

You have a choice of three base metals: low-alloy high strength steels, open hearth or copper steels. Write for the free PAINTGRIP booklet. Just address the Armco Railroad Sales Co. Incorporated, 2581 Curtis Street, Middletown, Ohio.

ZINCGRIP-PAINTGRIP ARMCO STEEL

ARMCO RAILROAD SALES CO. INCORPORATED

"Team Work" ON THE RAILROADS

OLDER STEAM LOCOMOTIVES (SOME 30 YEARS OF AGE) TEAM UP WITH NEW, MODERN POWER TO MAKE HISTORY ON AMERICA'S RAILROADS

. . . sets new
Performance Records

Freight and passenger traffic skyrockets to new records in 1944.

★ **Railroads performed more than 737,000,000,000 ton-miles of freight service — considerably more than double that in 1939.**

★ **Passenger travel increased to about 96,000,000,000 passenger miles—considerably more than quadruple that in 1939.**

• *A good job well done* . . . that tells the story of steam locomotive performance on America's railroads. Old timers and modern locomotives are working together to help set today's performance records with fewer cars and a smaller labor force.

Nalco water treatment is contributing much to this performance by permitting longer engine runs, extending periods between washouts, decreasing the amount of fuel consumed and helping maintain peak locomotive performance.

NATIONAL ALUMINATE CORPORATION
6216 W. 66th Place • Chicago 38, Illinois
PAIGE-JONES CHEMICAL COMPANY
Canadian inquiries should be addressed to Aluminate Chemicals, Ltd.
555 Eastern Avenue, Toronto, Ontario

Nalco
—System of Water Treatment

Cylinder iron containing molybdenum has shown consistent ability to meet service requirements.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

ARMY E NAVY

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Molybdenum Company

500 Fifth Avenue · New York City

MOLY

THE ALERT DR. JACKSON

Old-time railroaders will tell you that it pays any road to make friends with its patrons. You never know when a patron can do something for your railroad. Like what Dr. George P. Jackson did for the Burlington.

Dr. Jackson practices dentistry in Aurora, Illinois, a big railroad center and home of Burlington shops. He commutes from the little town of Sugar Grove, eight miles from Aurora. His house is close to the right-of-way along which Burlington Zephyrs and other fast trains break speed records.

One night, when a train whizzed by, he dozed. A train's rhythmic clicking often put him to sleep. But this time there was something unusual about that clicking, something that brought the dentist wide awake.

He jumped to his telephone and called the Burlington night dispatcher at Aurora. "Something wrong with the rails, or the wheels of that train," Dr. Jackson reported. The dispatcher automatically flicked a lever on his centralized control board and halted that train before it had gone far beyond Sugar Grove.

The next minute the dispatcher was calling a nearby section foreman. The latter soon discovered that a small piece of steel had been chipped out of the ball of a rail. But the piece was big enough to cause a derailment—unless the railroad was unusually lucky.

The faulty rail was replaced. Traffic was resumed. But a railroad, like an elephant, does not forget. A few weeks after Dr. Jackson had voluntarily saved the Burlington from a possible wreck, Assistant Vice President H. C. Murphy gave a formal dinner in his business car in Aurora.

Among the guests were the mayor of Aurora, the city editor of the Aurora *Beacon-News*, Vice President J. C. James, and Division Superintendent J. R. Mulroy. But the most important guest was Dr. George P. Jackson.

"Any nonrailroader who thinks as much of a railroad as you do, Dr. Jackson," said Mr. Murphy, "should be equipped with a good timepiece, especially if he is a commuter. Please accept this wrist watch bearing a record of our railroad's appreciation."

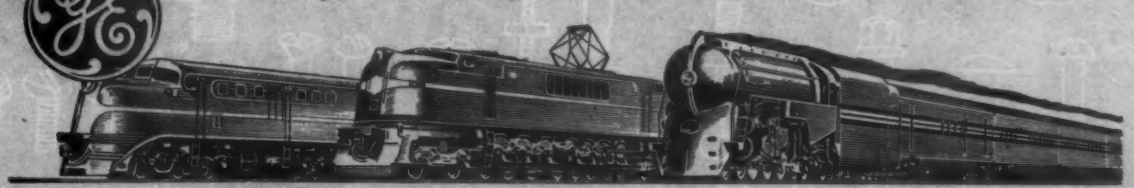
Slightly flustered, Dr. Jackson replied: "I have done nothing any other man brought up on a railroad would not have done. But I am honored at this evidence that your railroad values my interest in keeping the trains rolling."

*—The Trackwalker**

★ ★ ★

Alco GE

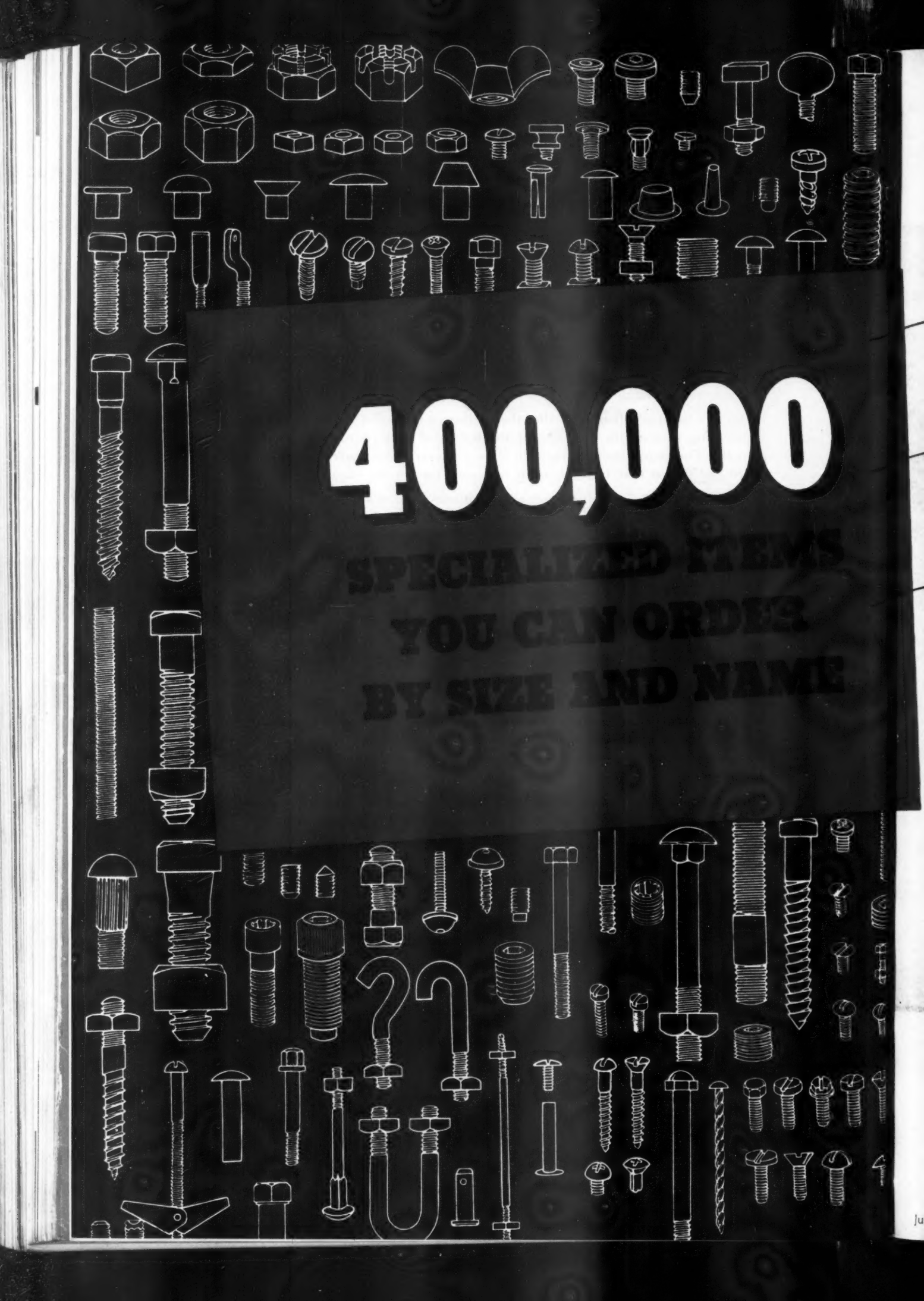
Alco-G.E. diesel-electrics on the west coast are now working three eight-hour tricks a day, switching and classifying trains of as many as 100 loaded cars, to keep pace with stepped up schedules of war in the Pacific.



AMERICAN LOCOMOTIVE • GENERAL ELECTRIC

Copr., 1945, American Locomotive Company and General Electric Company **Reg. U.S. Pat. Off.*

113-112


400,000
SPECIALIZED ITEMS
YOU CAN ORDER
BY SIZE AND NAME

July 28,

SCREWS

★MEETING YOUR SPECIFIC NEEDS

★ACCURATELY MADE, UNIFORM

BOLTS

★DEPENDABLE

NUTS

In perhaps no other field of manufacture is the American talent for standardization and efficiency more clearly shown than in the field of Industrial Fasteners. Today, designers and fabricators of small appliances or huge structures can select fasteners of the types and sizes they need from over 400,000 standard items. Many of these are specialized fasteners, developed to serve a definite useful purpose.

The development of uniform standards has materially reduced the variety of items made, simplifying your buying problems; the use of modern precision methods in the manufacture of fasteners, assures interchangeability and accurate fits.

To guide the designer and fabricator of products and structures of all types and sizes, there is available a wealth of authoritative design data. When you base your designs upon this proved engineering data and the known properties of fasteners, you can have complete confidence in the ultimate results.

RIVETS

AMERICAN INSTITUTE OF BOLT, NUT AND RIVET MANUFACTURERS

1550 Hanna Building • Cleveland 15, Ohio

INSUTAPE and WOVENSTONE'S GREATER EFFICIENCY PROVIDE MORE EFFECTIVE HEATING OF CAR INTERIORS WITH LOWER FUEL CONSUMPTION . . .

For maximum protection of vital piping and steam lines—Insutape and Wovenstone help send steam coursing through piping the length of the longest trains with minimum loss of precious B.T.U.'s! Under post war projected high speed conditions this added protection will be more essential than ever before in providing real passenger comfort—while holding fuel costs down at the same time.

UNION ASBESTOS

MEANS PROGRESS IN INSULATION

AND RUBBER CO.

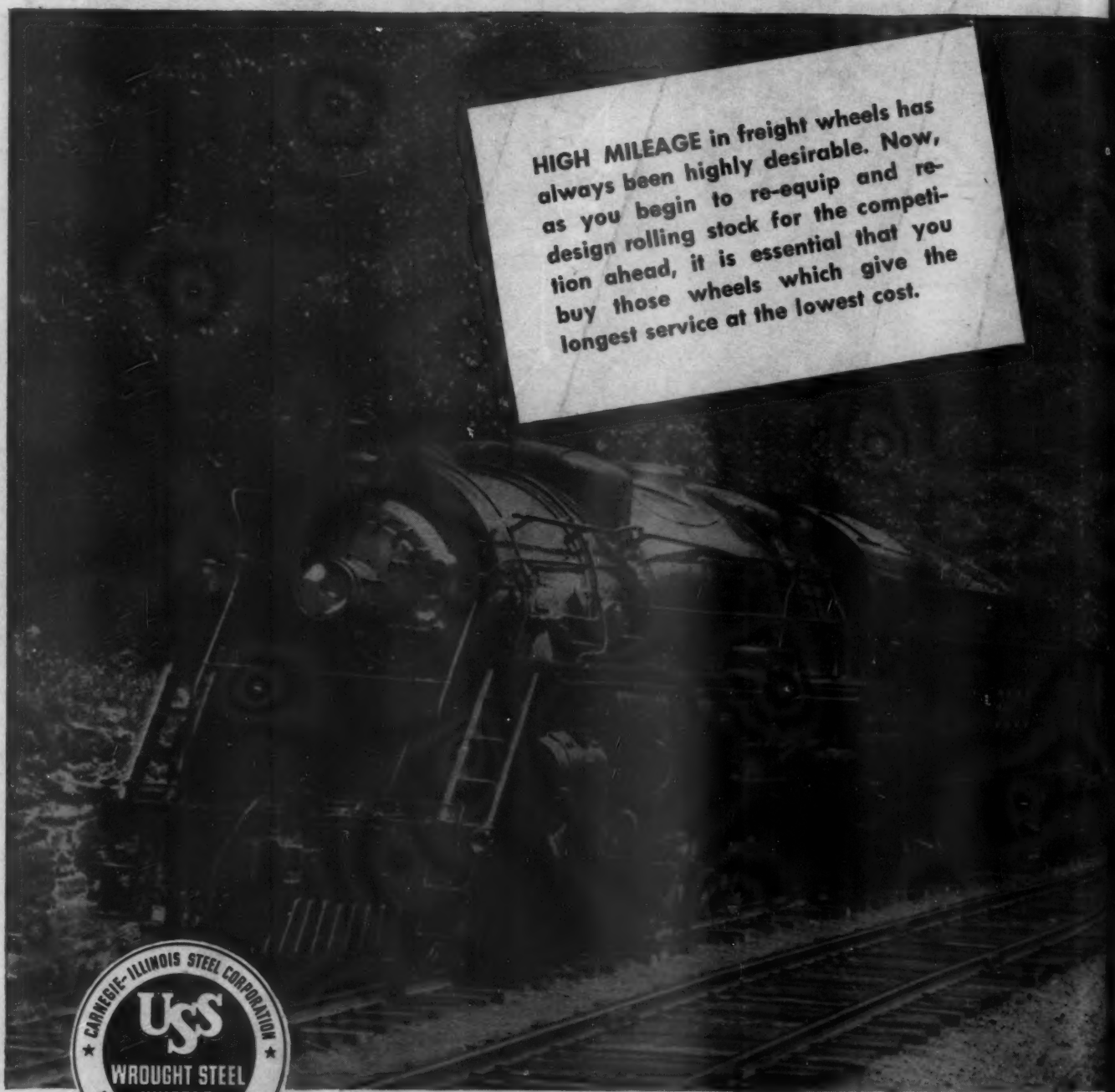
310 S. MICHIGAN AVE.

NEW ADDED PROTECTION FOR INSUTAPE AGAINST THE WEATHER AND OIL AND FIRE AS WELL! NEOPRENE COATING FOR THE JACKET; AND THE INSULATING FILLER MADE WATER REPELLENT.

CHICAGO 4, ILLINOIS

FOR *Higher Mileage,*

CHANGE TO U·S·S ONE-WEAR


HIGH MILEAGE in freight wheels has always been highly desirable. Now, as you begin to re-equip and re-design rolling stock for the competition ahead, it is essential that you buy those wheels which give the longest service at the lowest cost.
CARNEGIE-ILLINOIS STEEL CORPORATION
USS
WROUGHT STEEL WHEELS
UNITED STATES STEEL

UNITED

Greater Safety, Lower Cost

WROUGHT STEEL WHEELS!

MORE than 80% of all 70-ton freight cars are equipped with Wrought Steel Wheels . . . that fact is a weighty vote of confidence from managers who must deal with the problems of safety, service and cost of maintaining rolling stock.

Wherever U·S·S One-Wear Wrought Steel Wheels have been adopted, delays due to wheel failure have been sharply reduced. That's because U·S·S Wrought Steel Wheels can endure heavy brake action and impact at high speeds.

And One-Wear Wrought Steel Wheels add thousands of mile-hours to a freight car's earning power before it must go to the repair track . . . a considerable saving in time and money because wheels need to be changed less frequently.

On the basis of cost per thousand miles, U·S·S One-Wear Wrought Steel Wheels assure substantial savings in the long run. They average considerably more than 200,000 miles under 50/55-ton service . . . 160,000 miles under 70-ton service. Many wheels have gone well over 300,000 miles, and some have topped 400,000 miles before reaching the condemning limit.

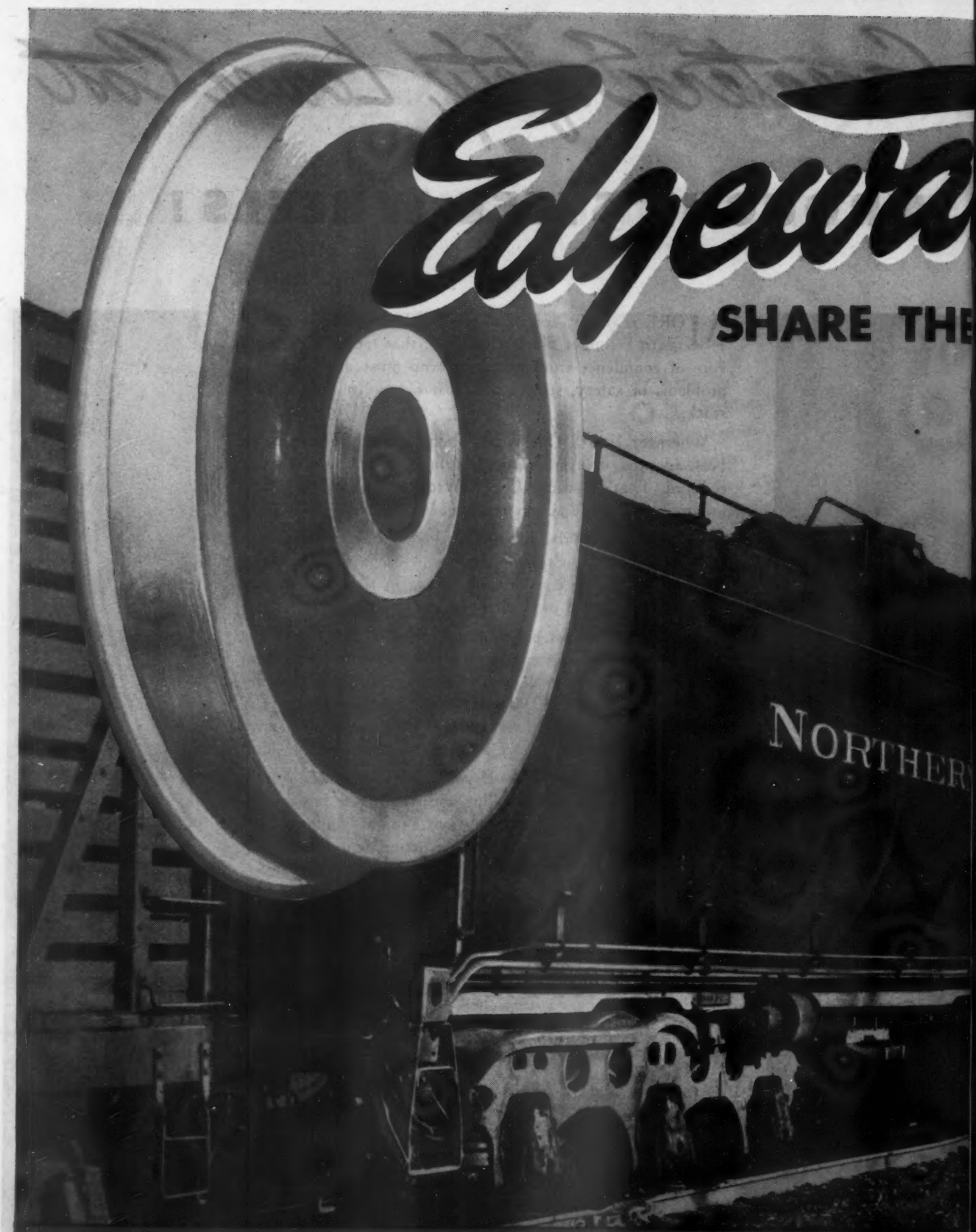
If you want your stock to keep rolling with the fewest possible interruptions, not only under today's difficult wartime conditions, but also under the strenuous service of postwar competition, change over to U·S·S One-Wear Wrought Steel Wheels.

CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Export Company, New York

STATES STEEL


Edgewat
SHARE THE
EDGEWATER STEEL COMPANY · PITTSBURGH, PA.

...ter ROLLED STEEL WHEELS

...E TRIUMPH OF WARTIME SHIPPING

AMERICAN railroads play a vital part in our country's symphony of war. In carrying 90 percent of the nation's war transportation load in 1944, they broke all records with 785 billion ton miles of freight.

We are proud that so many cars and locomotives equipped with Edgewater Rolled Steel Wheels are helping the railroads win the battle of transportation. Edgewater products have contributed to the increased availability and greater mileage of rolling stock which have made new records possible.

...tlanta, Ga. Baltimore, Md. Boston, Mass. Chicago, Ill. Cleveland, O. Kansas City, Mo. Louisville, Ky. New York, N.Y.
...hiladelphia, Penna. St. Louis, Mo. St. Paul, Minn. San Francisco, Calif. Seattle, Wash. Washington, D. C.

Let's look at the record of **ALCOA**

ITEM **ALUMINUM**

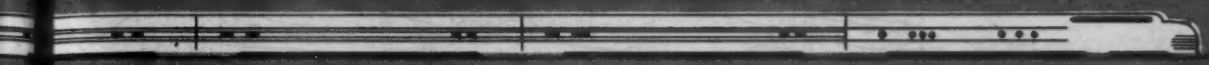
Locomotive shop of the Denver & Rio Grande Western R.R. uses aluminum paint to increase visibility.

Signal posts on many railroads are painted with aluminum both for protection and increased visibility.

ALCOA ALUMINUM

ALCOA ALUMINUM

ALUMINUM *in Railroad Service*



PAINT MADE WITH ALCOA ALBRON* PIGMENT

Along the right-of-ways, in shops, roundhouses, freight houses, stations and on rolling stock, aluminum paint made with Alcoa Albron is doing an outstanding job for American Railroads.

Where blasts of steam, sulfurous fumes and smoke put paint to the severest test, this aluminum paint stands up. Where visibility is important, this metallic paint proves invaluable. Where protection against heat is essential, aluminum paint, with its high reflectivity, often means a difference of 15 degrees in inside temperature.

The gleaming finish and high reflectivity of aluminum paint made with Alcoa Albron symbolize care and progressiveness. Moreover, aluminum paint pays dividends in reduced maintenance costs.

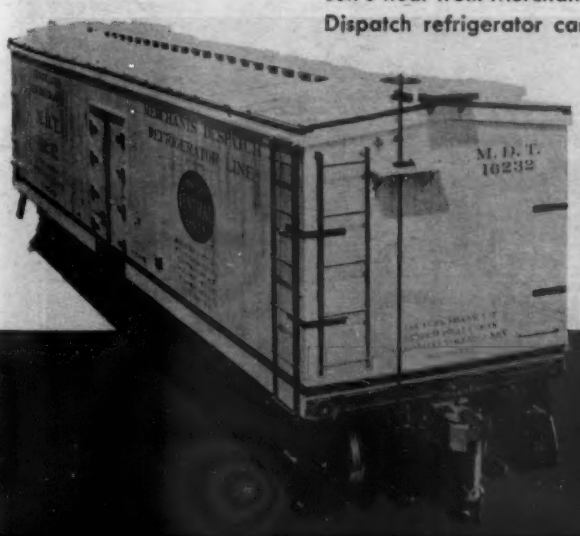
For more information, write to the Railroad Division, ALUMINUM COMPANY OF AMERICA, 2178 Gulf Building, Pittsburgh 19, Penna.

**Registered Trademark*

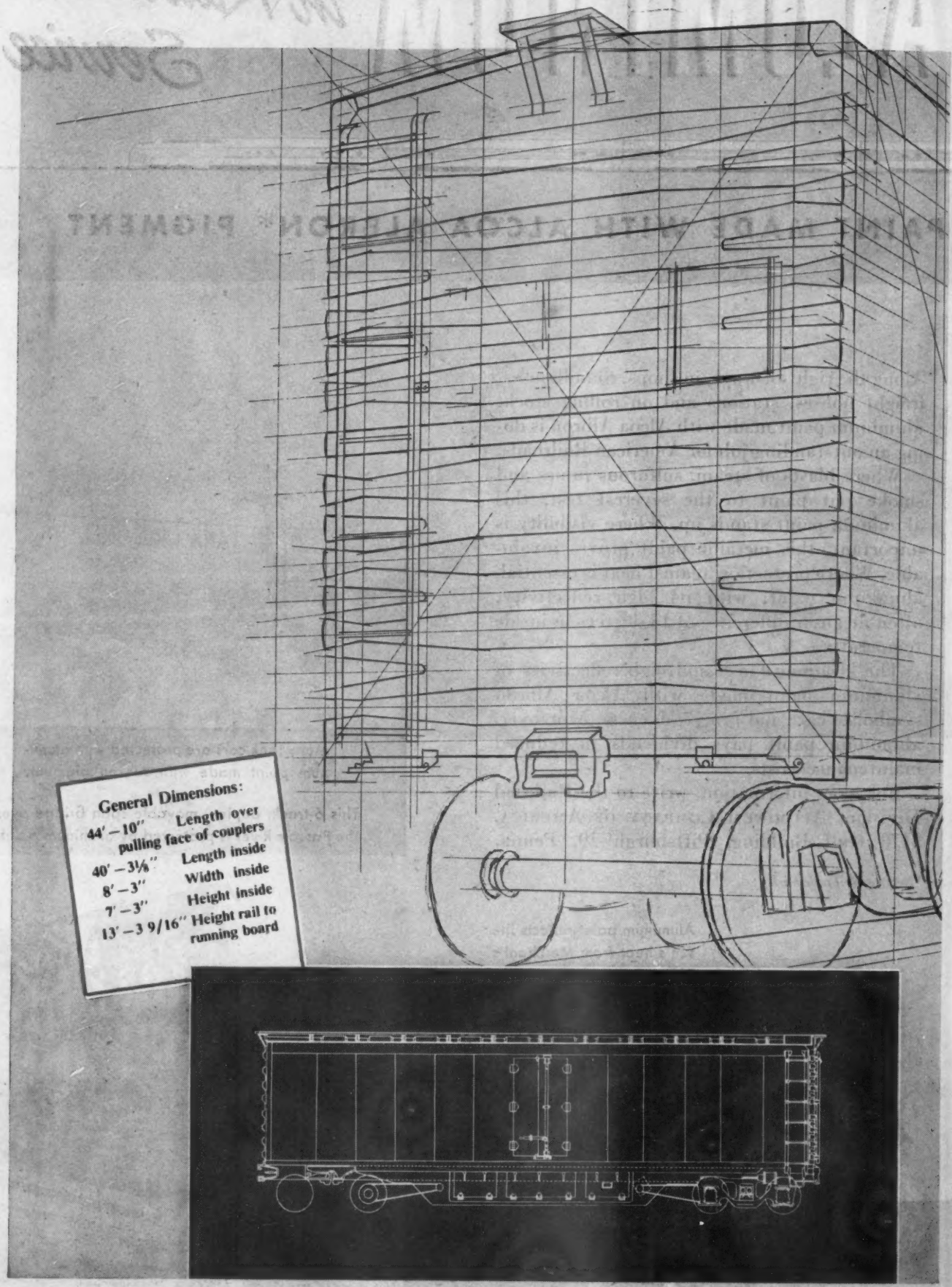
Many tank cars are protected with aluminum paint made with Albron pigment.

This 6-track, duplex, movable span bridge over the Passaic River is protected by aluminum paint.

Aluminum paint reflects the sun's heat from Merchant's Dispatch refrigerator cars.



How UP-TO-DATE are you

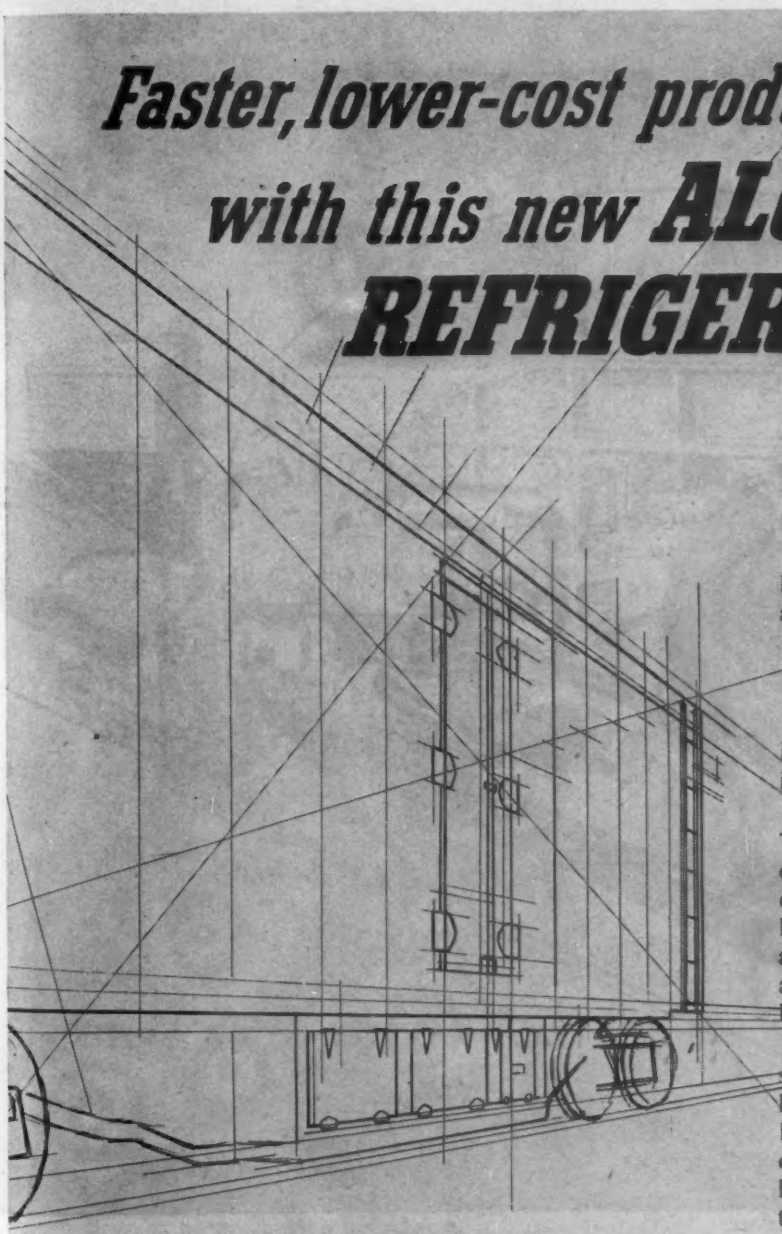


General Dimensions:

44′ – 10″	Length over pulling face of couplers
40′ – 3⅛″	Length inside
8′ – 3″	Width inside
7′ – 3″	Height inside
13′ – 3 9/16″	Height rail to running board

on ALUMINUM?

Faster, lower-cost produce-shipping with this new ALUMINUM REFRIGERATOR CAR



TODAY aluminum box cars, A.A.R. approved, roll the rails. Designed by Reynolds . . . built of great, new, lightweight battle-tested alloys.

Aluminum refrigerator cars, completely blueprinted to meet A.A.R. specifications, are ready to go into production.

Here are some of the things these new refrigerator cars will do:

They will be hours faster to market. Fewer icing stops required. Lower center of gravity permits inclusion on high-speed trains.

They will be more economical to operate. These great new alloys save 14,000 lbs. dead weight (21%) over conventional cars of the same exterior dimensions. This means less draw-bar pull, a saving in power-fuel, and, in addition, icing costs are reduced approximately 23% due to aluminum's high heat reflectivity.

They will stand up better. Aluminum's superior corrosion-resistance means longer life . . . lower maintenance costs. Made of R301, the tough battle-tested alloy developed by Reynolds metallurgists, these cars have a structural strength equal to many types of steel cars.

Consider Aluminum . . . Consult Reynolds. Complete information upon request. Blueprints available. Reynolds Metals Company, Railway Supply Division, 310 Michigan Avenue, Chicago 4, Ill.

LIGHTER! MORE CU. SPACE . . .

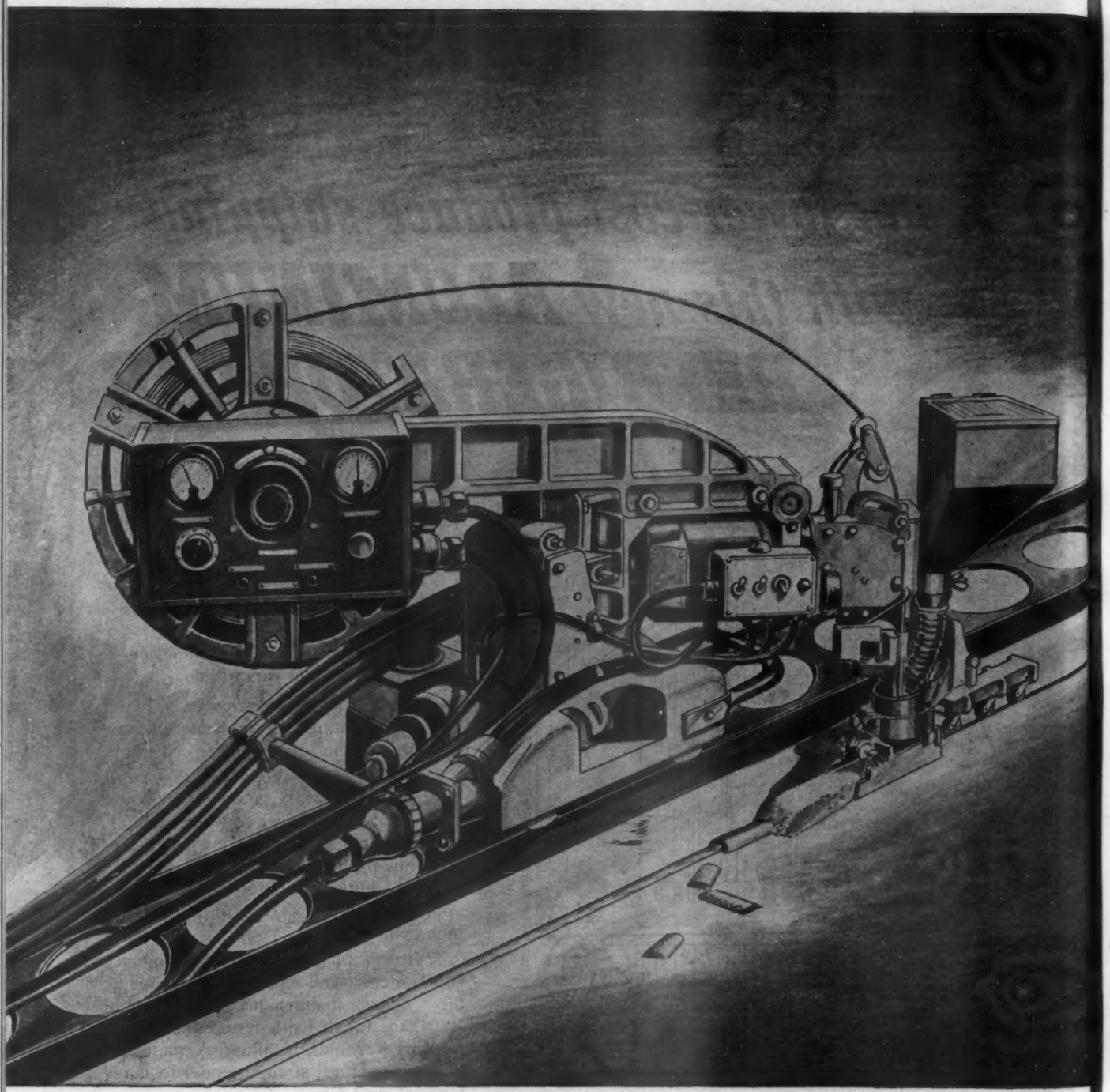
USES 23% LESS ICE!

REYNOLDS METALS

REYNOLDS ALUMINUM

The Great New Source of

INGOT · SHEET · SHAPES · WIRE · ROD · BAR · TUBING · PARTS · FORGINGS · CASTINGS · FOIL · POWDER

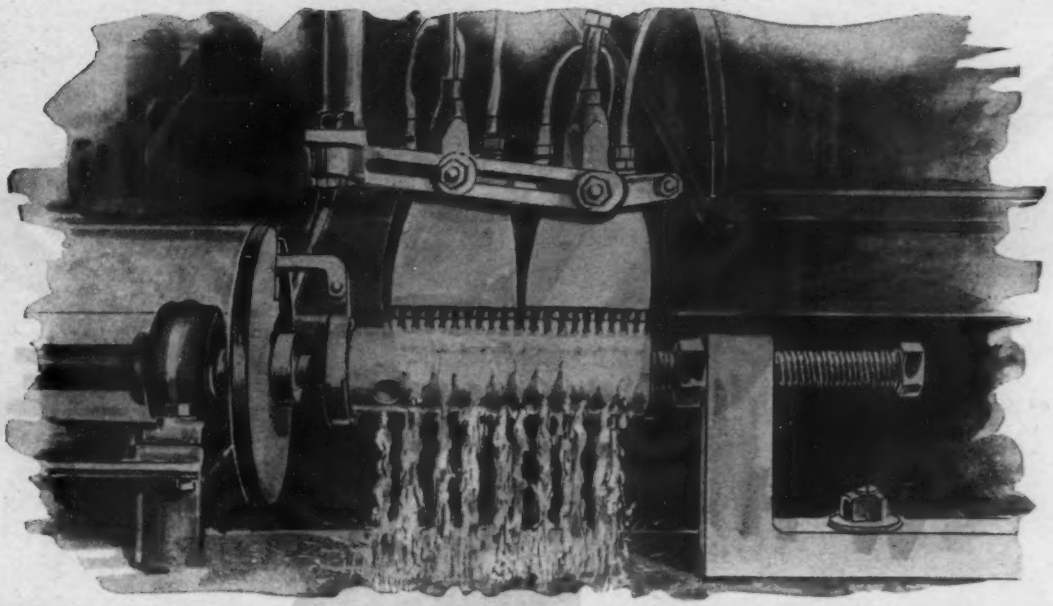


Oxweld Methods Speed

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York

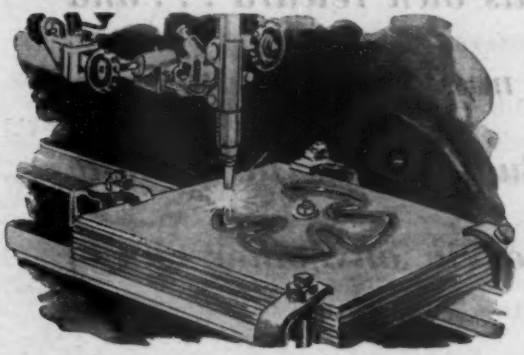
BUY UNITED STATES
WAR BONDS AND STAMPS

SINCE 1912—THE COMPLETE OXY-ACETYLENE

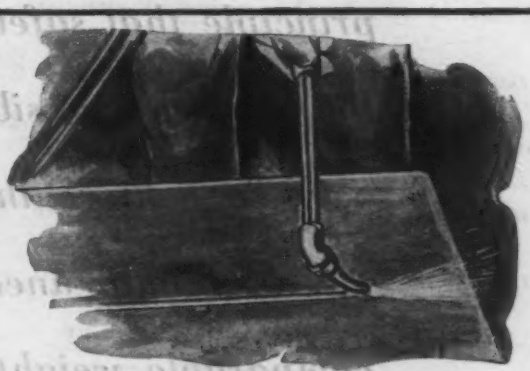


High Quality Welds are made with UNIONMELT welding at speeds that are greater than with any other similarly applicable process. This automatic electric process operates without sparks, spatter, smoke, or flash.

Hard-To-Get-At Points where wear occurs are strengthened quickly and economically with Oxweld's flame-hardening. The chemical composition, ductility, and toughness of the core and surrounding areas are unaffected.



Clean, Smooth-Edged Parts, identically shaped, are rapidly cut from piled plate with Oxweld's oxy-acetylene shape-cutting machines. The parts usually require little or no machining before use.



For Grooving Weld Joints to receive backing-up welds, for preparing plate edges for welding, for opening cracks in castings for welded repair . . . OXWELD gouging nozzles, fitted to cutting blowpipes, are quick, easy to use.

Fabrication and Repair

The words "Oxweld" and "Unionmelt" are registered trade-marks of Units of Union Carbide and Carbon Corporation.

SERVICE FOR AMERICAN RAILROADS

Budd, in making railway cars, is guided by the principle that safety is its own reward . . . and that, however possible, it must be built into every car. To achieve this, Budd builds to strength . . . a strength unequalled in any other car of comparable weight.

Getting this extra strength—and extra safety—demanded unusual materials, new designs and workable methods of fabricating. Stainless steel was the answer. Three times stronger than carbon steels, twice stronger than low alloy steels (such as Cor-Ten), it carried with it the promise of added safety. To use stainless for structural purposes challenged Budd engineers. They designed for this metal a car structure that permitted far greater strength at stress points, and was, at the same time, less

-SAFETY?

weighty. They found methods of bending and forming the material. They used the SHOTWELD* system of fabrication, an outstanding addition to the certainty of strength and soundness. Safety was never forgotten.

Mention has been made of the lighter weight of Budd stainless steel cars. This lightness without compromise with strength is important to railway operation. It permits fast schedules because of quicker rates of acceleration and deceleration. It means more pay load per train; for, with equal power, more cars can be hauled. These facts have been demonstrated, as has the remarkable durability of Budd-built car structures.

These favorable factors, and the inherent qualities of stainless steel, as they pertain to strength and safety, will do much in the years ahead to augment the already splendid operating records of our American railroads.

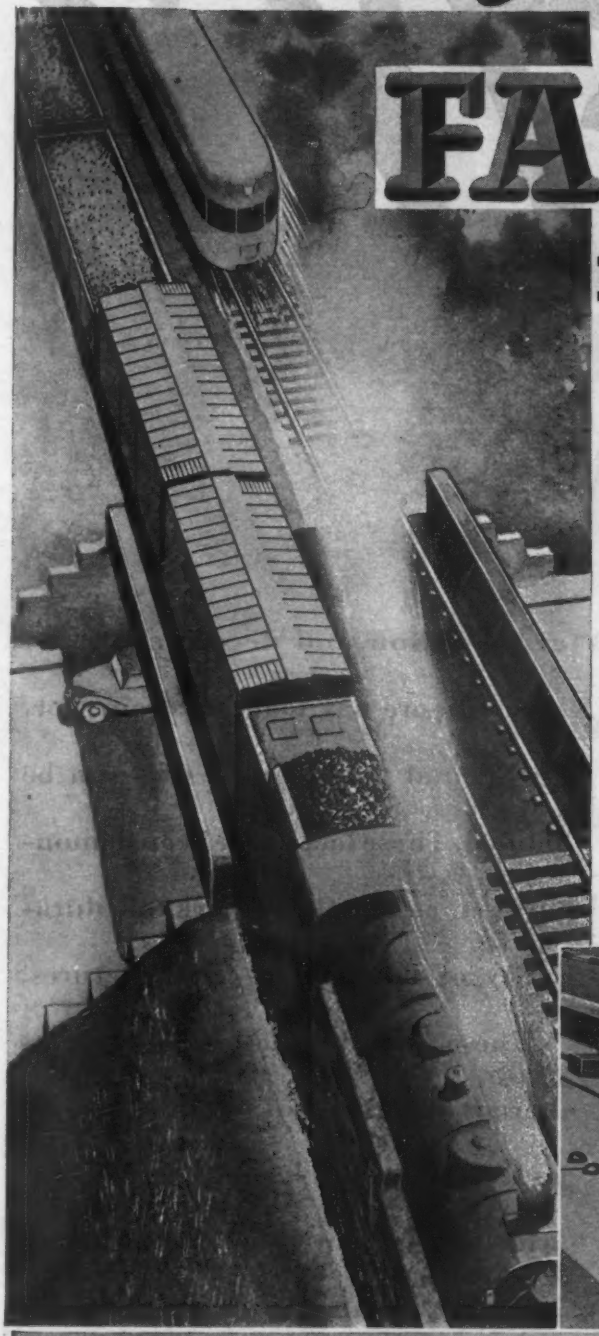
*Reg. U. S. Pat. Off.

EDWARD G. BUDD MANUFACTURING COMPANY

Budd

PHILADELPHIA • DETROIT • CHICAGO • NEW YORK • ST. LOUIS • SAN FRANCISCO • WASHINGTON

On Steel and Concrete Decked Bridges



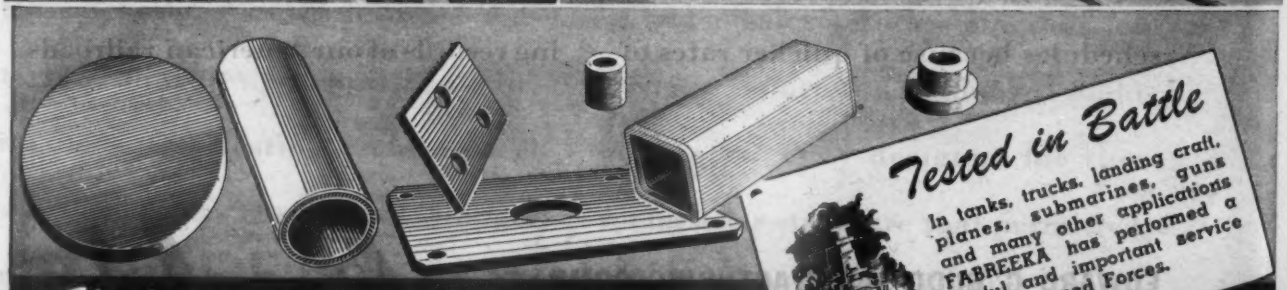
FABREEKA

ELIMINATES THE NEED FOR TIES AND BALLAST

The elimination of ties and ballast reduces proportionately the depth of excavation and concrete work required to obtain the proper bridge clearance. This saves time, materials and money,—and frequently avoids engineering problems.

Write for our Engineering Book: Fabreeka for Impact Shock, Vibration and Noise.

FABREEKA PRODUCTS COMPANY, INCORPORATED
BOSTON 10, MASSACHUSETTS



Used in RAILWAY PASSENGER CARS, Trucks and Platforms . . . LOCOMOTIVES, Steam and Diesel Electric . . . TRACK CONSTRUCTION, on Bridges, Crossings, Curves, Turntables and Track Scales.

Tested in Battle

In tanks, trucks, landing craft, planes, submarines, guns and many other applications FABREEKA has performed a useful and important service for our Armed Forces.

NO ZOO EVER LUBRICATES A RHINO!

No zoo ever thought of using honey and almond cream on the hide of a rhinoceros to keep it from chapping. Nobody ever has to lacquer or refinish Formica laminated plastic—which is used on table and furniture tops, window stools, and as wall panelling—to keep it fresh!

Formica "Realwood" is plastic impregnated actual wood veneer covered with an added layer of transparent plastic, tough as the hide of a rhinoceros. Formica does not crack, check, or chip. No visible abrasion shows on table and furniture tops after years of wear. Food, drinks, and burning cigarettes do not spot or blister or stain it.

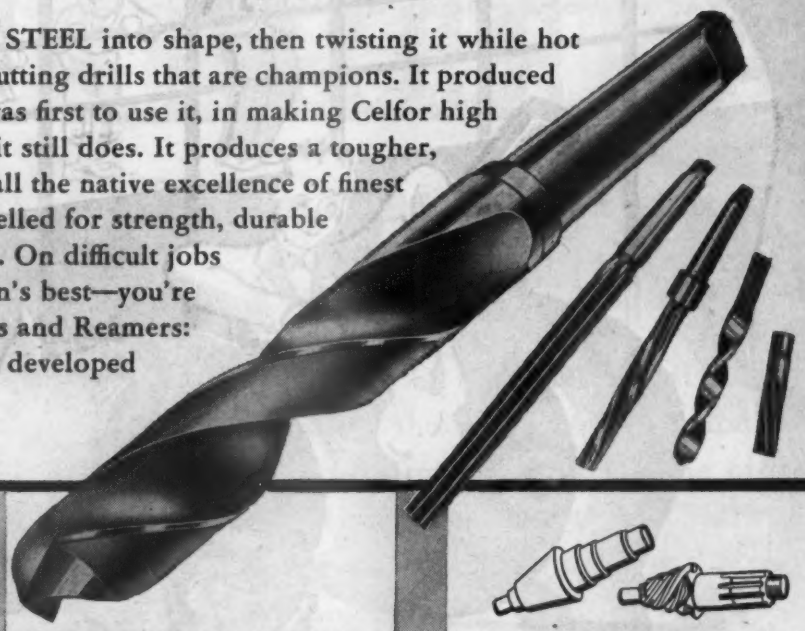
Formica comes in more colors than a bird of paradise, some as bright as bird feathers, but many are the pale tints perfect for large panelled surfaces. All are enhanced in limpid depth and richness which plastic alone imparts.

Formica in whatever color never fades. You can wash off the grime any day with ordinary soap and water and bring out the original newness and luxury of its paradise color.

FORMICA THE FORMICA INSULATION CO., 4641 SPRING GROVE AVE., CINCINNATI 32, O.

Blood lines of CHAMPIONS . . .

FORGING FINE TOOL STEEL into shape, then twisting it while hot—this process produces cutting drills that are champions. It produced champions when Clark was first to use it, in making Celfor high speed Twist Drills—and it still does. It produces a tougher, denser metal—preserves all the native excellence of finest steels, makes tools unexcelled for strength, durable accuracy and long life . . . On difficult jobs that challenge a champion's best—you're likely to find Celfor Drills and Reamers: proving their blood lines developed by the Men of Clark.



FORK TRUCKS AND INDUSTRIAL TRACTORS

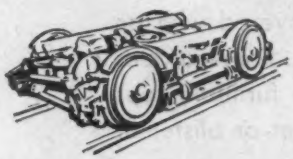
CELFOR HIGH-SPEED DRILLS AND REAMERS

GEARS AND FORGINGS

One piece, forged, heat treated AXLE HOUSING

ELECTRIC STEEL CASTINGS

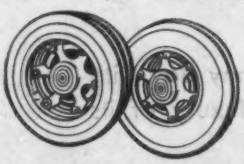
TRANSMISSIONS for Trucks, Busses, Tractors



STREET RAILWAY CAR TRUCKS

POWER BOOSTER for 1½-ton Trucks

BLIND RIVETING PROCESS



METAL SPOKE-TYPE WHEELS for Trucks, Busses, Trailers

AXLES—front and rear for Trucks, Busses, Tractors

EASY-ROLL TRAILER AXLE

CLARK EQUIPMENT COMPANY

RAILWAY DIVISION - - - BATTLE CREEK, MICHIGAN

Magor

DESIGNERS AND MANUFACTURERS of Freight Cars of All Types Including Air Dump Cars

Express Box Car Service—

for high speed operations —will be expanded in the post-war period. We will be pleased to consider your requirements.

★

MAGOR CAR CORPORATION

Guaranteed:

"Personal Appearance"

OF HEYWOOD'S

POSTWAR COACH SEATS

WHEN Heywood's postwar line of coach seats is unveiled in a few months, we *guarantee* to show you *actual samples*, not sketches or photographs. True, drawings and pictures can indicate styling and design but only *actual samples* can test engineering perfection and comfort. And *that's* where the new Heywood seats *shine!*

● Although we are putting a major part of our development emphasis on construction features, comfort and quality, every postwar seat will be *brand new* in styling and design, too. Every new seat was developed from scratch . . . from the *one basic principle* of standard seat measurements arrived at from scientific research and years of practical experience.

● When you get your personal invitation to attend the unveiling of these new Heywood coach seats, make *every* effort to attend. You'll be rewarded by seeing the *finest coach seating ever made!*

HEYWOOD-WAKEFIELD

Established 1826 • Gardner, Massachusetts

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REVOLUTIONARY SIMPLICITY IN PASSENGER CAR HEATING . . .

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HE HEATING SYSTEM

FROM THIS [illegible] UNIT PART

ALL CAR HEATING R[illegible] CAN [illegible] . .

FROM SINGLE CIRCUIT SY[illegible]
WHEN COST IS A PRIME CONSIDERATION

FLOOR PLAN SHOWING ONE VALVE AND COIL ON EACH SIDE OF CAR
FLOOR PLAN SHOWING CAR FULLY ZONED BY SIMPLE ADDITION OF UNIT VALVES

KEY
- 955 VAPOR REGULATOR
- SINGLE INLET VALVE
- DUAL INLET VALVE
- CAR RADIATION

TO ZONED SYSTEM
A SIMPLE METHOD OF PROVIDING THE ULTIMATE IN INDIVIDUAL PASSENGER TEMPERATURE-COMFORT

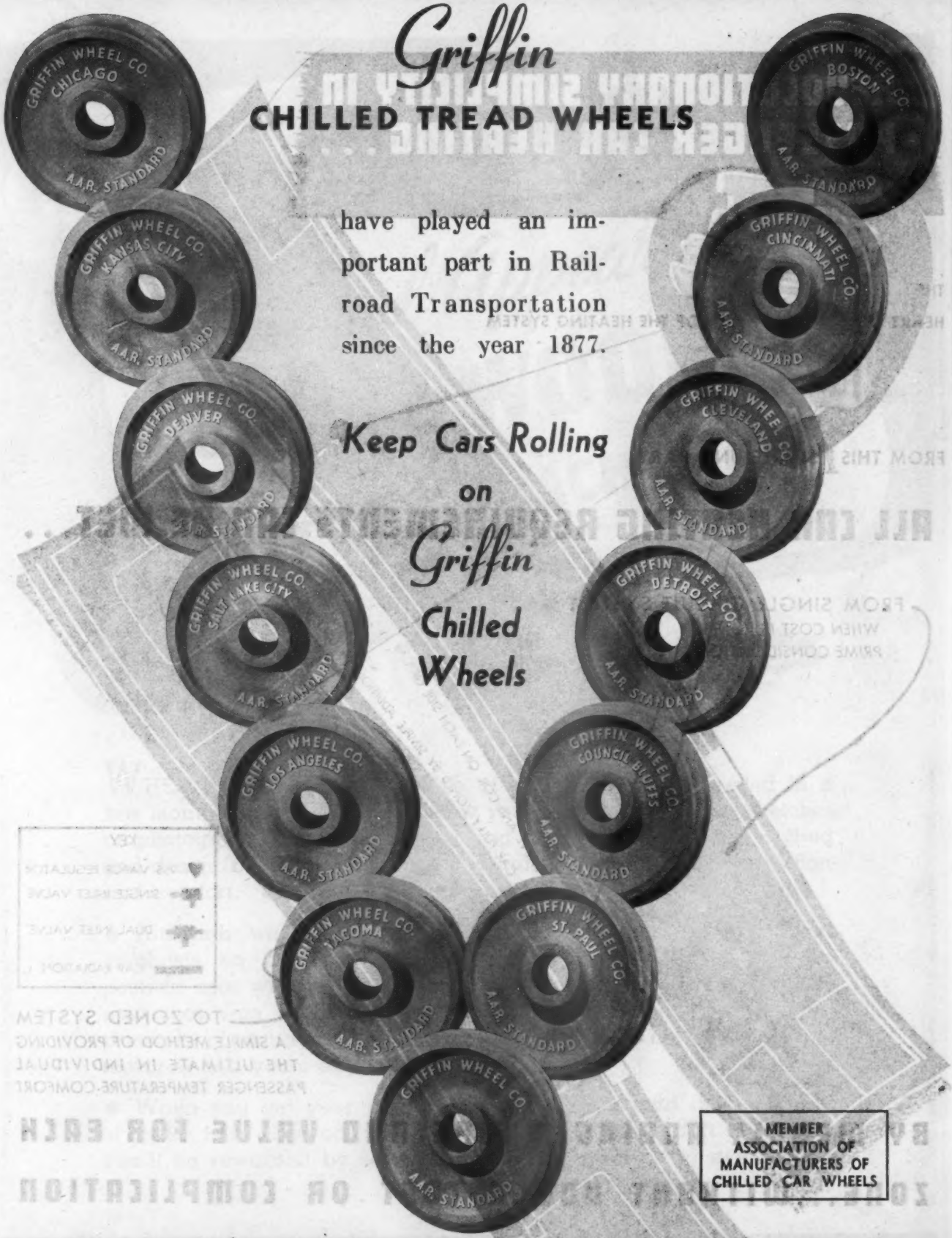
BY [illegible] AND VALVE FOR EACH ZONE. WITH[illegible] COST OR COMPLICATION

VAPOR CAR HEATING CO. INC.
RAILWAY EXCHANGE — CHICAGO 4, ILLINOIS

Griffin
CHILLED TREAD WHEELS

have played an important part in Railroad Transportation since the year 1877.

Keep Cars Rolling on Griffin Chilled Wheels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Railroad painting problems ...OUR SPECIALTY

• Few, if any, large scale purchasers of paint products use them for as many different purposes and under as many different conditions as the railroads. For this reason railroads often face knotty problems concerning paint or painting procedures. And these are the problems which we of Glidden are always ready to help you solve.

The Glidden Railroad Technical Service has gathered such a wealth of knowledge through handling so many such problems, railroads everywhere are finding this service an invaluable help today. One of the best-known developments of this technical service, TWO-A-DAY car painting, is now enabling the roads to drastically reduce time out for the painting of equipment so vitally needed for war transport.

Wherever any problem involving paint or painting procedures develops, Glidden Railroad Technical Service is quickly available through any one of our eight strategically located plants and research laboratories. Phone or write us for this expert help.

TIME-TESTED

THE GLIDDEN COMPANY • Cleveland 2, Ohio

GLIDDEN *Pacemaker in Paints*

New Passenger Cars Get the Green Light-

PROTECT THEIR RIDING QUALITIES WITH "RAILWAY" SPRINGS

★ For greater passenger comfort and trouble-free service at minimum cost — specify "Railway" Springs for truck assemblies. Many years of research and service experience with all kinds of spring problems, coupled with accurate control in scientific manufacturing, heat treating and inspection, enable "Railway" to furnish springs of distinctly superior quality — the correct spring to suit the most exacting operating requirements.

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AMERICAN LOCOMOTIVE COMPANY

RAILWAY STEEL-SPRING DIVISION

30 CHURCH STREET NEW YORK 7, N. Y.

I•B CRANES DO MORE WORK
AT LESS COST • EVERY DAY • EVERYWHERE

That freighter snugged up at the wharf will clear port in record time—its capacity load of scrap iron speedily and economically transferred to railroad cars by the two Industrial Brownhoist 4 Motor Electric Cranes, shown, each handling a 65 inch magnet. And when it docks again, the chances are good that it will be loaded just as swiftly by other I.B. equipment. For the ability of I.B. Cranes to handle more work in less time and at lower cost has won for I.B. a prominent position on wharves and docks practically the world over. In fact, no matter where or what the material handling job is—whether it calls for portal pier cranes, coal and ore bridges, car dumpers, or Diesel Locomotive Cranes equipped with magnet, hook or bucket—Industrial Brownhoist equipment is unsurpassed. Write today for complete facts.

Above: Two I.B. 4 Motor Electric Cranes, on traveling portal piers, have 10 ton capacity at 55 ft. radius, 26½ tons at 21 ft. radius. Below: I.B. Diesel Locomotive Crane with patented Monitor-type cab which allows operator 360° visibility.

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INDUSTRIAL BROWNHOIST CORP. • BAY CITY, MICH. • District Offices: New York, Philadelphia, Cleveland, Chicago • Agencies: Detroit, Birmingham, Houston, Denver, Los Angeles, San Francisco, Seattle, Vancouver, B.C., Winnipeg, Canadian Brownhoist Ltd., Montreal, Quebec.

Building and Servicing Locomotives that Keep Pacific Traffic Speeding

Sturdy Elwell-Parker Crane handling Locomotive drive axle with wheels.

Elwell-Parkers Working 24 hours a day at Terminals and Shops Nationwide. The E-P Man will help you get new Truck and Crane Equipment

Nine little pictures—merely suggesting dozens of jobs Elwell-Parkers are doing in Locomotive Plants, Terminals and Roundhouses straight across the country to help the Roads keep men and munitions speeding westward. With relaxation of governmental controls Elwell-Parker Representatives can assist you in scheduling orders for needed equipment. Wire or write The Elwell-Parker Electric Company, 4250 St. Clair Avenue, Cleveland 14, Ohio.

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

HEARD THE ONE ABOUT THE TRUCK AND THE FARMER'S DAUGHTER ?

Chalking up a very impressive record, accentuated by an acute manpower shortage, Bendix-Westinghouse Air Brakes have shown to excellent advantage in keeping the nation's motor transport rolling safely . . . efficiently . . . economically ★ The farmer's daughter and thousands of her sisters have gone behind the "wheel" of vehicles which, under ordinary control, would have taxed the endurance of their more muscular brothers ★ The result has been the formation of a new legion of enthusiastic boosters for genuine Bendix-Westinghouse control which merely begins its effectiveness where ordinary brakes leave off ★ And this is just one phase of the contribution this "world standard of safety" has made in extending the scope of essential transportation. In addition, thousands upon thousands of old-line drivers have been more efficient because the positive control of Air Brakes has relieved them of much unnecessary physical effort ★ More than ever before, genuine Bendix-Westinghouse Air Control offers many exclusive advantages you can't afford to miss. And remember, too, Air Brakes cost much less than you'd think. On this, your local Distributor will be happy to give you actual facts and figures.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY . . . ELYRIA, OHIO

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AIR BRAKES

AND PNEUMATIC CONTROL DEVICES

IT IS SIGNIFICANT THAT AMERICA'S FINEST MOTOR TRUCK FLEETS ARE EQUIPPED WITH BENDIX-WESTINGHOUSE AIR BRAKES

Versatile Airco Processes

Machine Gas Cutting speeds the shaping of parts required for new railroad equipment and for replacement purposes. Here a rough forged trailer truck equalizor is being shape-cut on an Airco Travograph. The tracing device guided by the operator controls torch movement.

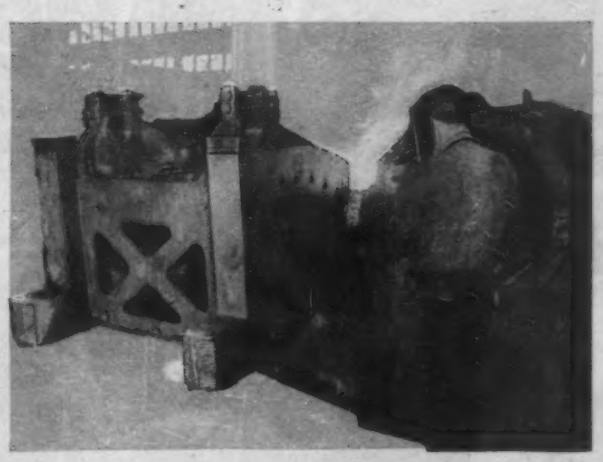
TO meet the critical problems caused by heavy wartime wear and the serious shortage of replacements, American railroads have stepped up shop activities to include a greater amount of fabrication and repair work than ever before. In carrying out this program, they have made extensive use of Airco oxyacetylene flame and electric arc processes, some of which are illustrated here.

Other Airco methods that are giving valuable aid to the railroads include: braze welding for repair of cast and malleable iron, hardfacing, silbrazing, hand cutting, flame hardening, and flame heating for straightening and bending. Airco's Applied Engineering Department will give full information and technical assistance on any of these modern metal-working processes. For complete details write the nearest Airco office, or Dept. RA at the New York address.

AIRCO

Save Shop Time and Cost

Oxyacetylene Welding helps to repair damaged parts quickly and economically. This operator is welding new return bends onto a superheater unit.



Arc Welding has won widespread acceptance among railroad men for the fabrication of many locomotive and car parts. This photo shows a new frame section being welded to a cast steel locomotive cylinder. Front end of frame is beveled for welding onto main frame section.

Flame Descaling quickly removes furnace scale from forgings like these locomotive side rods. This method causes adhering scale to "pop off" without scratching or marring the metal surface.

Flame Gouging is used in modern railroad shops for removing defective welds and surface cracks. Here a crack in a car coupler is being "veed" out prior to welding — a cost saving reclamation method which has been authorized to help the railroads meet war conditions.

Pipe Welding by either the oxyacetylene flame or electric arc method makes strong, leakproof joints in steam, water and other piping systems.

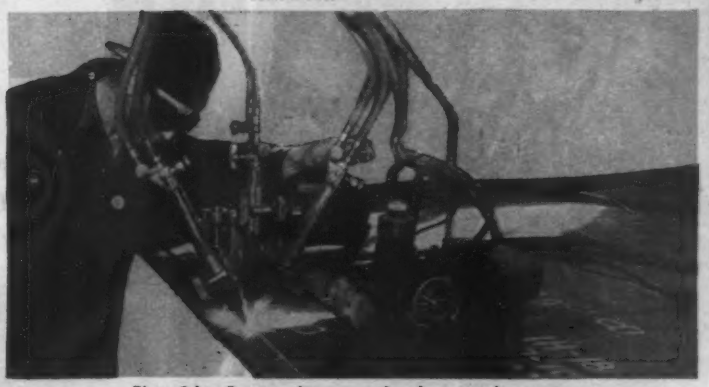


Plate-Edge Preparation saves time in preparing parts for welded fabrication. Small, portable machines like this Airco Radiagraph are ideal for preparing heavy plate for welding with maximum speed and accuracy.

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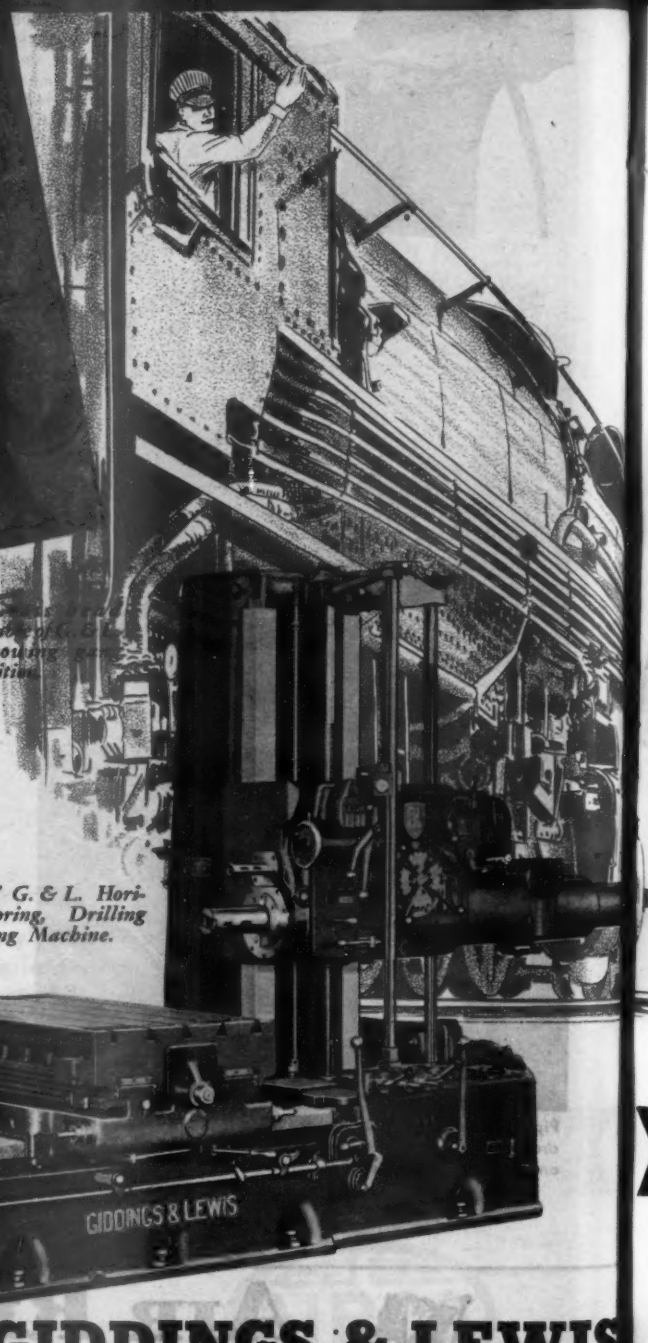
G. & L. Cuts FROM

(Above) Gang milling cutters in actual operation.



(Above) G... mounted on ta... machine, shou... cutters in positi...

No. 340-T G. & L. Horizontal Boring, Drilling and Milling Machine.

GIDDINGS & LEWIS M

152 DOTY STREE... FO...

Right: G. & L. Table Type Machine.

Right: G. & L. Floor Type Machine.

CROSS HEAD *Machining Time*

8 HOURS TO 30 MINUTES

Locomotive Repaired and Back on the Road in 4 Hours
...this job is typical of many type repairs handled on versatile
HORIZONTAL BORING MACHINE

Now more than ever before, railroads must repair their locomotives and have them back on their runs with the least possible delay. Here is an excellent example of how a No. 340-T G. & L. Horizontal Boring, Drilling and Milling Machine is used in a large western railroad shop to reduce locomotive down time.

On this repair job the cross heads were removed, the bearing metal poured and multiple ledge slots were milled with a gang cutter. Actual machining required but 30 to 35 minutes as compared to a former machining time of eight hours. The cross heads were then replaced and the locomotive was on the road again in four hours.

1200 Cross Heads in One Month

Performance of the G. & L. machine has been so successful on this operation that it was used to turn out 1200 completely machined cross heads in one month and, in addition, was used to ream the tapers and bore and ream the pin holes.

Replace Single Purpose Machines

In those railroad repair shops where it is impractical to have highly specialized single purpose machines to mill shoes and wedges, bore cylinders, bore roller bearing axle housings, mill, bore and channel rods, and similar other operations, the G. & L. Horizontal Boring, Drilling and Milling Machine with accessories and attachments can do such railroad machining work. Our engineers will be glad to assist you in solving urgent machining problems. They will show you how G. & L. machines are being successfully used in many other railroad shops.

MAIL NOW FOR NEW RAILROAD MACHINING GUIDE

MACHINE TOOL CO.
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Gentlemen: Please send me your *Free* bulletin of modern machining methods in railroad shops to speed up production and repairs.

Name.....*Title*.....

Company.....

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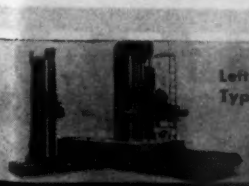

Left: G. & L. Planer Type Machine

Left: G. & L. Multiple Head Type Machine

Ready for You

Bullard Cut Master V.T.L.

With a Bullard MAN-AU-TROL V.T.L. you can economically machine long runs or single units . . . can protect yourself against changes in specifications . . . can give yourself a tremendous cost advantage in competitive markets. For complete details, write today for new bulletin on the new Bullard MAN-AU-TROL V.T.L.

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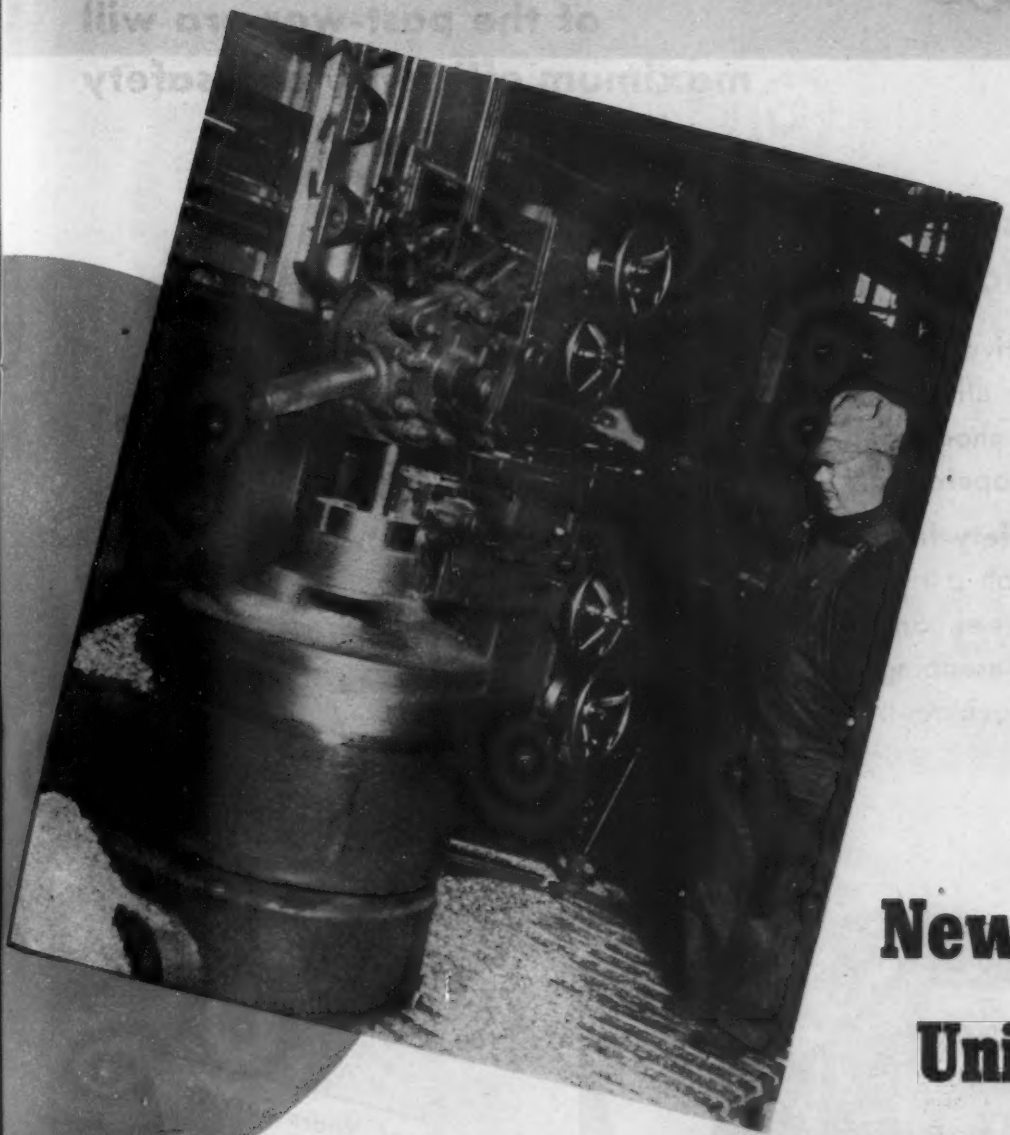
BRIDGEPORT 2

r Requisitions



New Bullard Units with Automatic Controls

BULLARD engineers have always pioneered in the design and progress of Vertical Turret Lathes. Every railroad shop supervisor is familiar with their precision and economical production.

In spite of the tremendous demands from industries engaged in war production, Bullard engineers have been working on many improvements which will revolutionize present practice in the machining of many locomotive parts.

The Cut Master V.T.L. has made a big hit in a number of large shops. It possesses many features which offer unusual savings in production costs.

These features include greater power, faster speeds, greater variety of feeds, more cutting heads, simplified controls, automatic stops and many other new developments.

—And now a new addition has been made to the Bullard line—the Man-Au-Trol V.T.L. It will automatically perform any and every job (involving up to 39 functions of the main head and 39 additional functions of the side head) that a manually-operated V.T.L. can do. Further, it is equally facile as a manually operated machine.

R D COMPANY ★ ★

CONNECTICUT

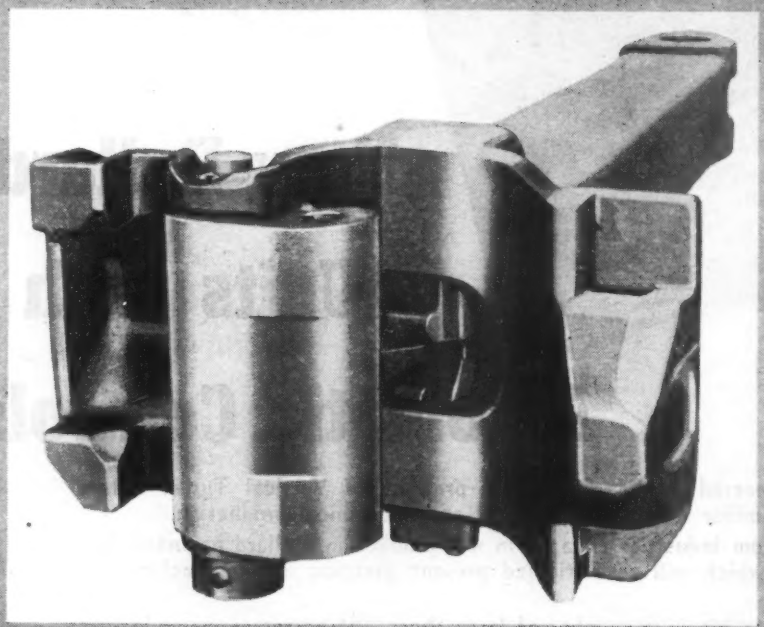
Deluxe HIGH SPEED

of the post-war era will maximum efficiency and safety

Safety for Passengers... Protection for Equipment

The A. A. R. tentative standard type H Tightlock coupler eliminates objectionable free slack shocks and noises in passenger train operation.

The interlocking safety feature intercouples cars through a rigid column of high-tensile steel, and lessens liability of cars telescoping or overturning in case of accident.



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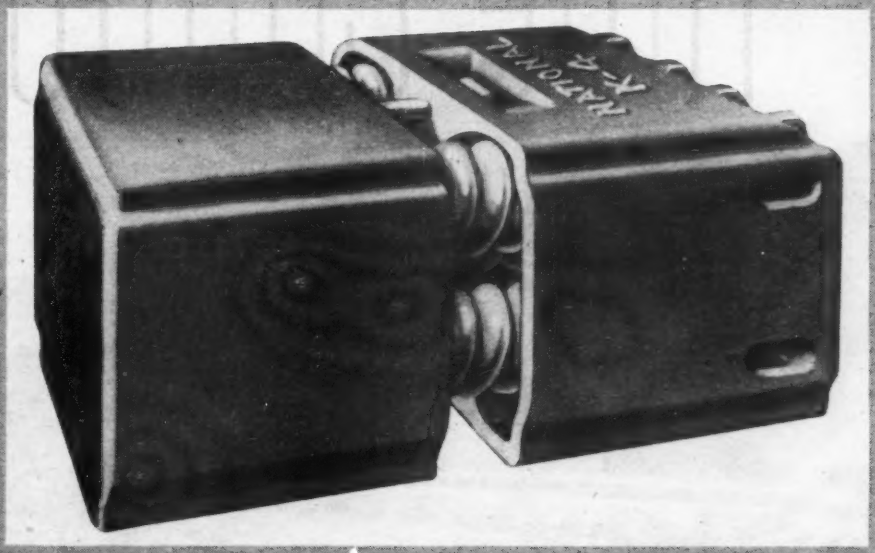
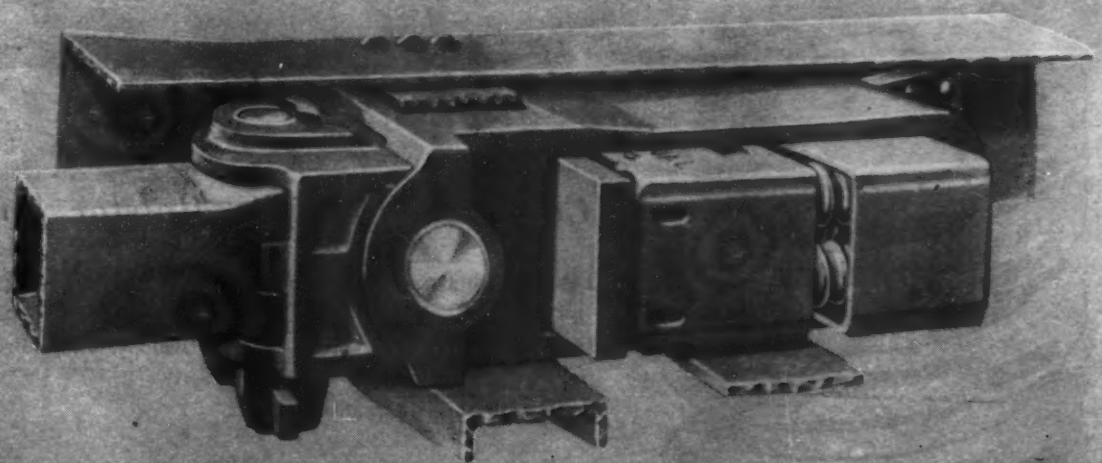
PASSENGER SERVICE

demand equipment of advance design, with



Comfort for Passengers ... Protection for Equipment

The National K-4 dual purpose passenger draft gear is a product of laboratory and road service development. It combines spring resistance for smooth starting and pulsation free riding, and a friction system in a fixed position for absorbing frequent impacts or heavy shocks.



National K-4 Draft Gear applied to car with Tightlock Coupler, swivel connection and yoke.

STEEL CASTINGS COMPANY

Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

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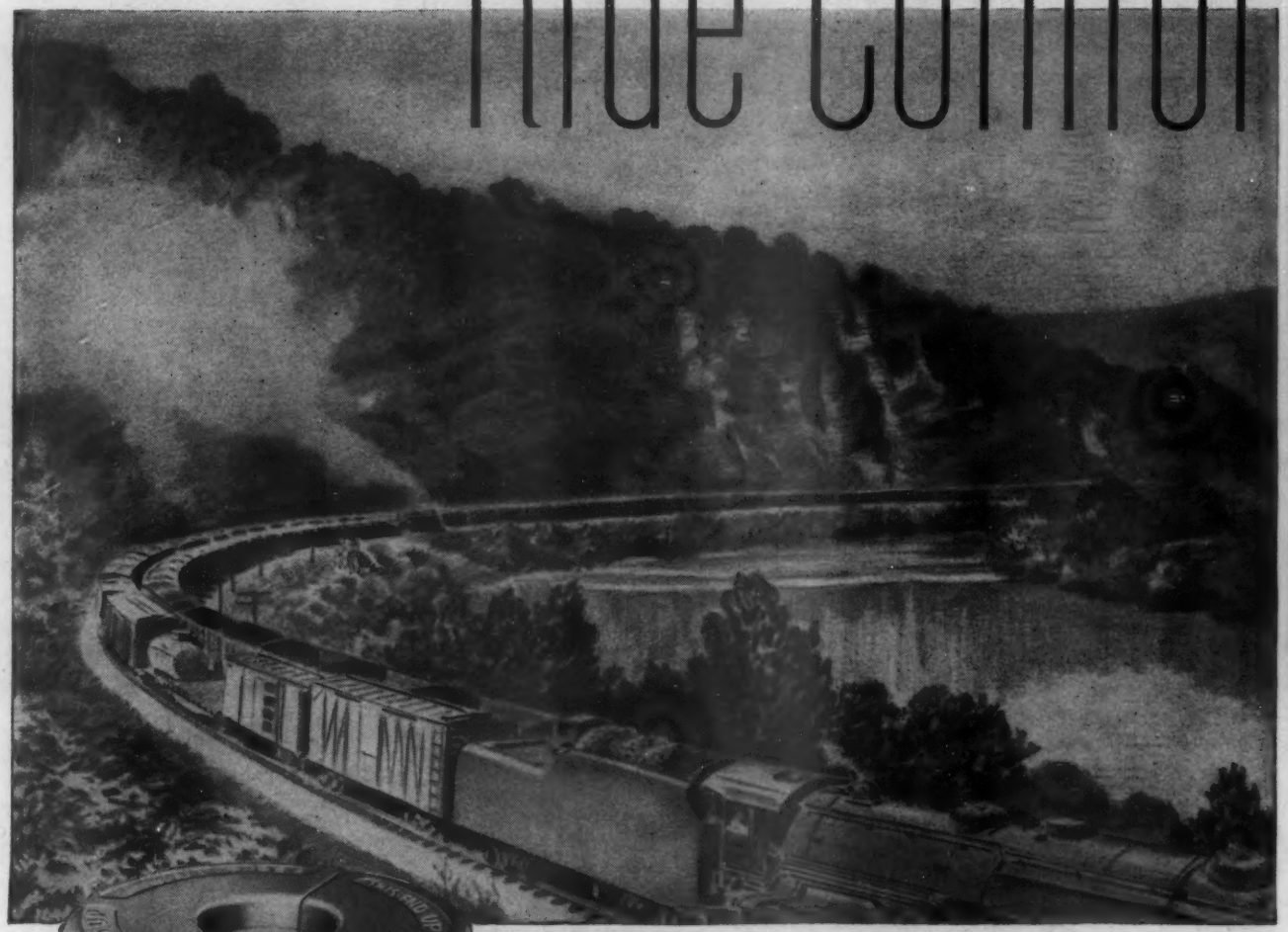
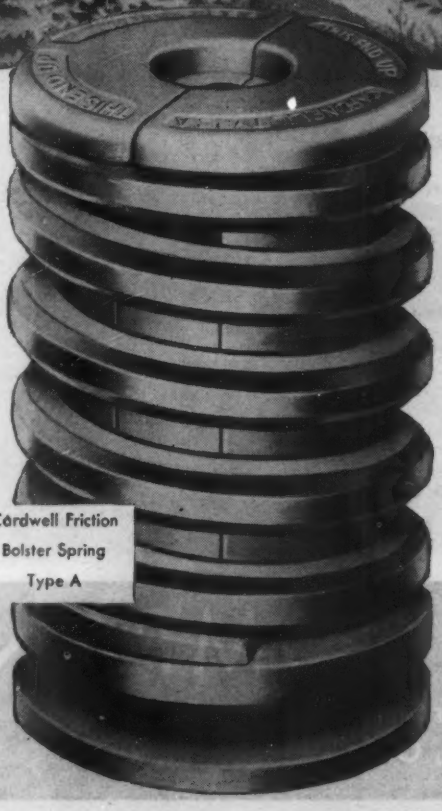
Ride Control





Cardwell Friction Bolster Spring Type A

Cardwell Friction Bolster Springs

Permit higher Speeds with Safety . . . Control Bouncing and Side-swaying—thereby providing effective Ride Control. Protect Cars and Lading against road shocks.

Cardwell Westinghouse Co., Chicago
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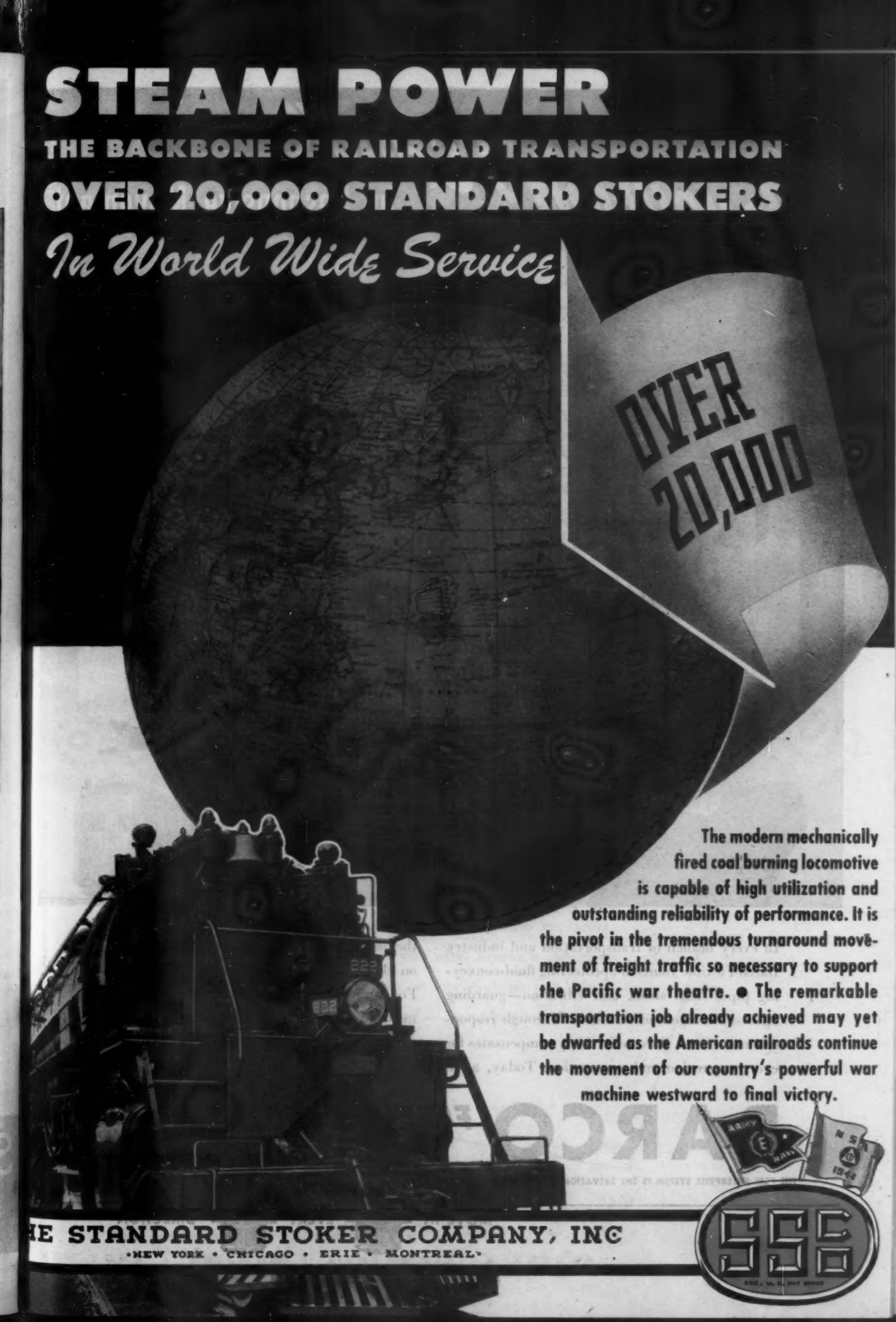
STEAM POWER

THE BACKBONE OF RAILROAD TRANSPORTATION

OVER 20,000 STANDARD STOKERS

In World Wide Service



The modern mechanically fired coal burning locomotive is capable of high utilization and outstanding reliability of performance. It is the pivot in the tremendous turnaround movement of freight traffic so necessary to support the Pacific war theatre. ● The remarkable transportation job already achieved may yet be dwarfed as the American railroads continue the movement of our country's powerful war machine westward to final victory.

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Ready to go places with radio

THIS former dynamometer test car used to work for a railroad...now it's on the job for **Aireon.** Completely equipped to demonstrate **Aireon's** train communications equipment, it's all set to visit your railroad. ● Staffed by Samuel W. Fordyce, III, formerly Assistant to the President of the Kansas City Southern Line, and several top **Aireon** radio engineers, this laboratory on wheels can show you what **Aireon's** inductive and space radio equipment can do on any division you select.

● We'd like to visit your railroad — meet your executives. Any **Aireon** office can arrange the details.

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Radio and Electronics — Engineered Power Controls

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VALVES FOR PUMPS, DIESEL ENGINES, COMPRESSORS

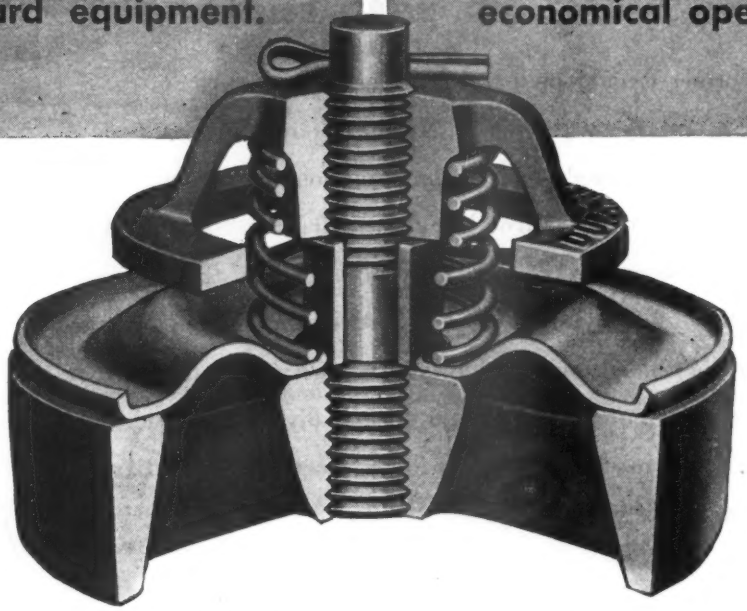
FOR MANUFACTURERS

An ever increasing number of Manufacturers of Pumps, Diesel Engines, and Compressors are using DURABLA Valves* as standard equipment.

FOR USERS

Any Pump, Diesel Engine, or Compressor can be fitted with DURABLA Valves as Replacement Units to achieve long term economical operation.

DURABLA Valves are compact; strong; light weight; capable of dealing with very wide pressure ranges.



DURABLA Valves are built to avoid stem breakage; are non-corrosive; self grinding; non-warping.

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He works slowly . . . quietly . . . continuously . . . and unobserved.

His prey is sub-surface cables, pipe lines and other metallic structures.

Unchecked, he can markedly shorten the life of buried equipment.

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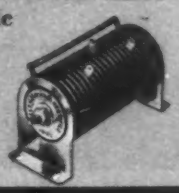
These equipments, incorporating Federal Selenium Rectifiers to convert alternating current to direct current, send a steady current through the earth surrounding underground metal structures, counteracting the natural forces of corrosive galvanic action.

Federal Cathodic Protection Rectifiers are now at work in all parts of the country . . . mounting silent, motionless guard over buried investments.

Stop deterioration of your equipment now. Put Federal Cathodic Protection Rectifiers to work for you . . . cost of operation is low . . . attention required is negligible.

Write us today for the FTR Technical Information Series booklet "Cathodic Protection and Applications of Selenium Rectifiers"...get the full story on this effective means of protection.

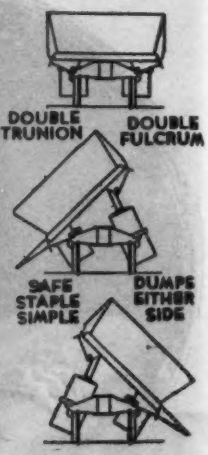


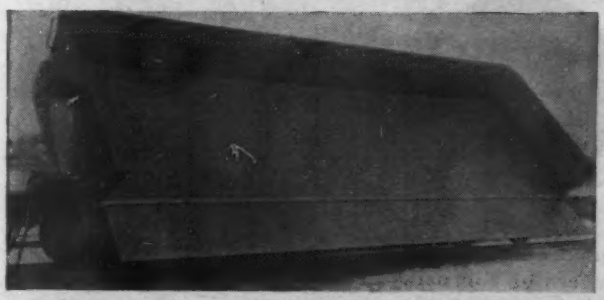
FEDERAL TELEPHONE & RADIO — FTR

Federal Telephone and Radio Corporation

AN IT&T ASSOCIATE

Newark 1, N. J.

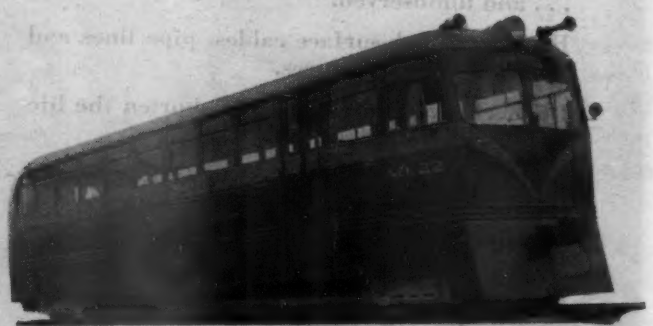




DIFFERENTIAL AIR DUMP CARS
(PATENTED)

DIFFERENTIAL AIR DUMP CARS are constructed to withstand severe loading and dumping conditions. Powerful air cylinders assure quick and positive dumping to either side. The double fulcrum principle as shown in the diagram supports the dump body on widely spaced fulcrums and there is no rocking or swaying in transit. Locking mechanism is eliminated and there is no chance for accidental dumping. Operation of side door is automatic and the load is deposited at an extreme distance from the track. The doors are held positively closed by the weight of the body and its load.

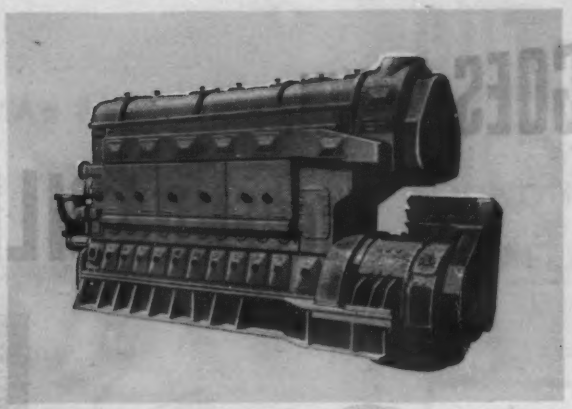
DIFFERENTIAL RAIL CARS
(PATENTED)
AXLESS TRUCKS



Differential Rail Cars are powered with four gasoline engines that deliver 500 HP to eight wheels. AXLESS Trucks permit independent rotation of wheels eliminating slippage and noise on curves.

DIFFERENTIAL STEEL CAR COMPANY
FINDLAY, OHIO, U. S. A.
Builders of Haulage Equipment Since 1915

AIR DUMP CARS · MINE CARS · MINE LOCOMOTIVES · ROCK LARRIES · DUMPING DEVICES
BURDEN-BEARING LOCOMOTIVES · STOCKPILING CARS · COMPLETE HAULAGE SYSTEMS



Tomorrow's power today! . . . It's the Opposed-Piston Diesel Locomotive by Fairbanks-Morse

A name worth *remembering*

WEIGHT GOES DOWN...

DEPENDABILITY UP...

when Alkaline Batteries Go IN ➡ ➡ ➡

Not only are Edison Alkaline Batteries the lightest weight type of battery available for railway-car service but their use saves weight where it counts most – near the middle of the car. The larger the kilowatt-hour capacity, the greater is the weight that can be saved by equipping cars with alkaline batteries.

An outstanding reason for their light weight advantage is their high-strength steel cell construction. This, together with their fool-proof electrochemical principle of operation give alkaline batteries unequaled dependability. You can have no better insurance of adequate capacity for operating the electrical luxuries and conveniences you provide for passenger comfort on post-war cars. Alkaline batteries have a long record of highly dependable service in 32-volt, 64-volt and 110-volt systems. *Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey.*

Electrical features being planned for superlative passenger comfort and convenience on post-war cars emphasize the advantages of using batteries that can provide increased capacity with least additional weight and with greatest inherent dependability of operation. All of these requirements are met by Edison Alkaline Batteries.

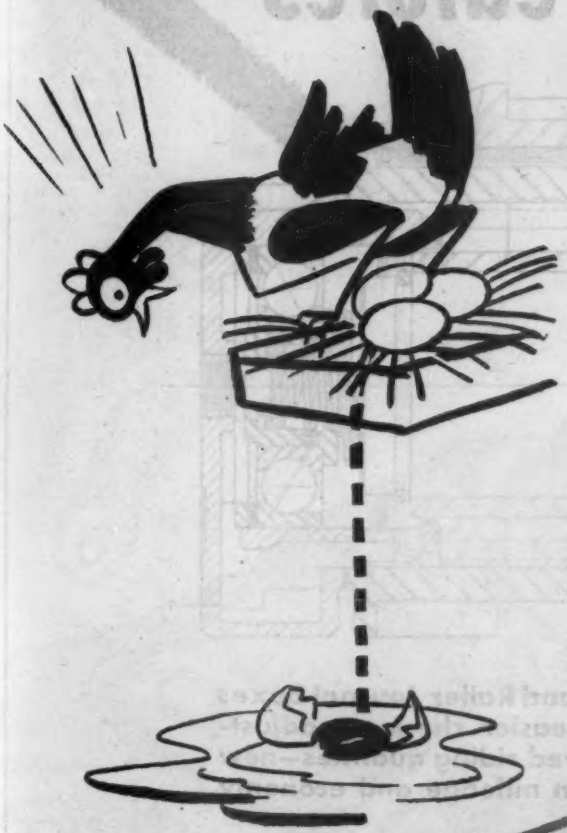
Edison

THE LIGHTWEIGHT BATTERY FOR LIGHTWEIGHT CARS

8170

IT'S EASY

To Break An Egg . . .



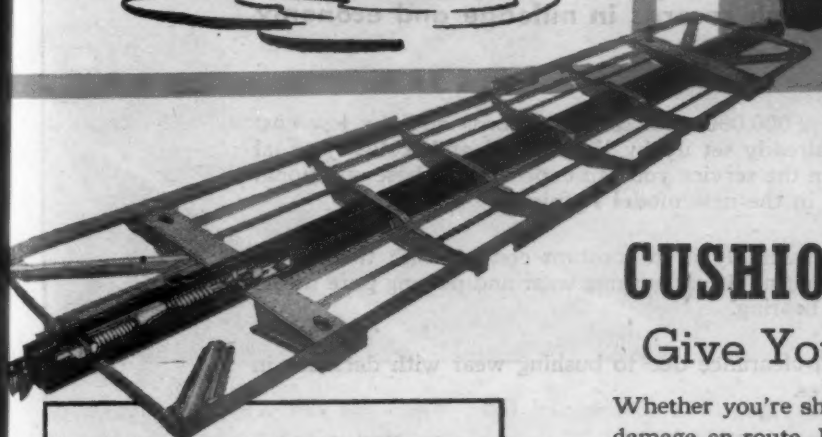
BUT—

An Egg Shipper

FOUND THE WAY TO SHIP EGGS SAFELY IN FREIGHT CARS

. . . "In checking our records since this (Duryea-equipped) car has been in our service, we have been unable to find any complaint by consignees as to the arrival condition of eggs in this particular car. Our various employees believe that car 7999 is ideal for egg loading. We sincerely hope that your people will equip more refrigerator cars with this type of underframe, as we believe that this will cut down on loss and damage claims."

(From a letter in our files)

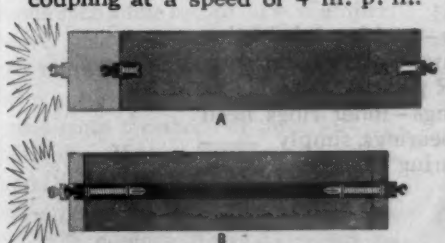


DURYEA CUSHION UNDERFRAMES

Give You Shockproof Shipping!

Whether you're shipping eggs or *any other* commodity subject to damage en route, Duryea-equipped cars give you better arrivals, reduced losses. The unique Duryea floating center sill travels the force of any impact the entire length of the car, absorbing it as it goes in big cushion springs—car and lading ride *over* the blow, comparatively unshaken.

Here's what actually happens . . . when two stationary freight cars receive the same impact, equivalent to a 50-ton car, loaded to capacity, coupling at a speed of 4 m. p. h.:



CONVENTIONAL CAR (A): Draft gear "goes solid," car receives almost entire impact.

DURYEA CAR (B): Shock absorbed by cushion gears, car and lading are comparatively undisturbed.

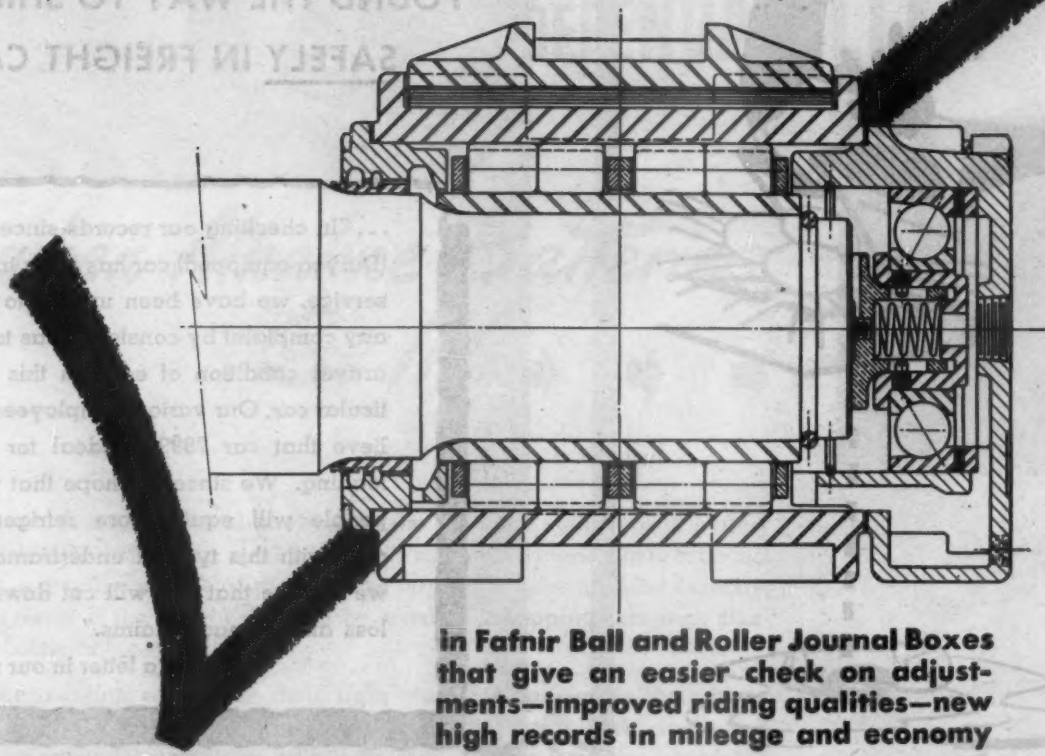
HOW THE DURYEA CUSHION UNDERFRAME CONTRIBUTES TO VICTORY

PROTECTS car and lading, prolongs car life, cuts damage claims.
PERMITS higher handling speeds.
ELIMINATES gear replacements, maintaining efficiency for life of car.
SAVES TIME loading and unloading. Needs less packing and bracing.
SAVES MONEY usually spent for maintenance on every part of car.
COMPLEMENTS air brake; Duryea cars withstand abrupt stops.
CUTS SLACK to pre-determined ideal.
COSTS NO MORE than conventional type, for average Duryea gear.

O. C. DURYEA CORPORATION

30 Rockefeller Plaza, N. Y. 20, N. Y. • 135 S. LaSalle St., Chicago 3, Ill.
725 Fifteenth St., N. W., Washington 5, D. C.

Note These New Features



in Fafnir Ball and Roller Journal Boxes that give an easier check on adjustments—improved riding qualities—new high records in mileage and economy

✓ Keeping in mind the 2,000,000 mile service records and the low cost maintenance figures already set up by Fafnir Ball and Roller Journal Bearings – check up on the service you can expect from these additional features incorporated in the new model Fafnirs!

✓ Spring loaded thrust assembly is in constant contact with the end of the axle thereby eliminating thrust bushing wear and putting pure thrust load on anti-friction bearing.

✓ No increase in lateral clearance due to bushing wear with decrease in operating temperatures.

✓ Conveniently located pipe plug can be removed to simplify checking of lateral clearance, eliminating the necessity of removing entire cover.

✓ Same lateral clearance as maintained in other types of Fafnir Journal Boxes to assure easier riding qualities and to reduce shock impact.

✓ Fafnirs are famous for easy starts and fast hauls – positive lubrication at all speeds – effective sealing out of dirt and water – cutting maintenance costs to the bone – adaptable to Standard AAR pedestal openings as well as most other types of wide pedestal openings – inner rings need not be removed at wheel turning periods, to apply bearings, simply slide on journal. Write for details. The Fafnir Bearing Company, New Britain, Connecticut.

FAFNIR BALL & ROLLER JOURNAL BEARINGS

REDUCE STARTING LOADS UP TO 90% . . . CUT MAINTENANCE COSTS TWO-THIRDS

"LUCKY ELEVEN"

IT WASN'T LUCK, of course, but sound business judgment that put eleven "Caterpillar"-Diesel-powered 44-ton locomotives on the lines of the Chicago, Milwaukee, St. Paul and Pacific.

Purchased in 1940, the initial unit made such a fine record on availability, power and low operating costs that ten more locomotives of similar size were put in service during 1941. They came from the shops of three leading builders — Whitcomb, General Electric and Davenport-Besler — but all had the same power: two "Caterpillar" Diesel D17000 engines direct-connected to railroad-type generators.

Nine of these locomotives have been used exclusively on way freight service and intermediate switching. On December 31, 1944, they had operated a total of 632,266 miles—handling trains up to 30 loaded cars. The average fuel cost has been less than 6 cents per mile and the actual maintenance, including labor and material, 6.06 cents per mile. Also, engine-house service has been eliminated and maintenance and operating crews have been reduced. On most runs one man handles a 44-tonner.

The Milwaukee may have been lucky to have had this Diesel fleet in service at a time when runs must be speeded up; schedules maintained; men, money and minutes conserved. You can share this luck by specifying "Caterpillar" Diesel Engines in your 44-ton locomotives—the power-plants that are an 8-to-1 choice over all other makes combined in this class of service.

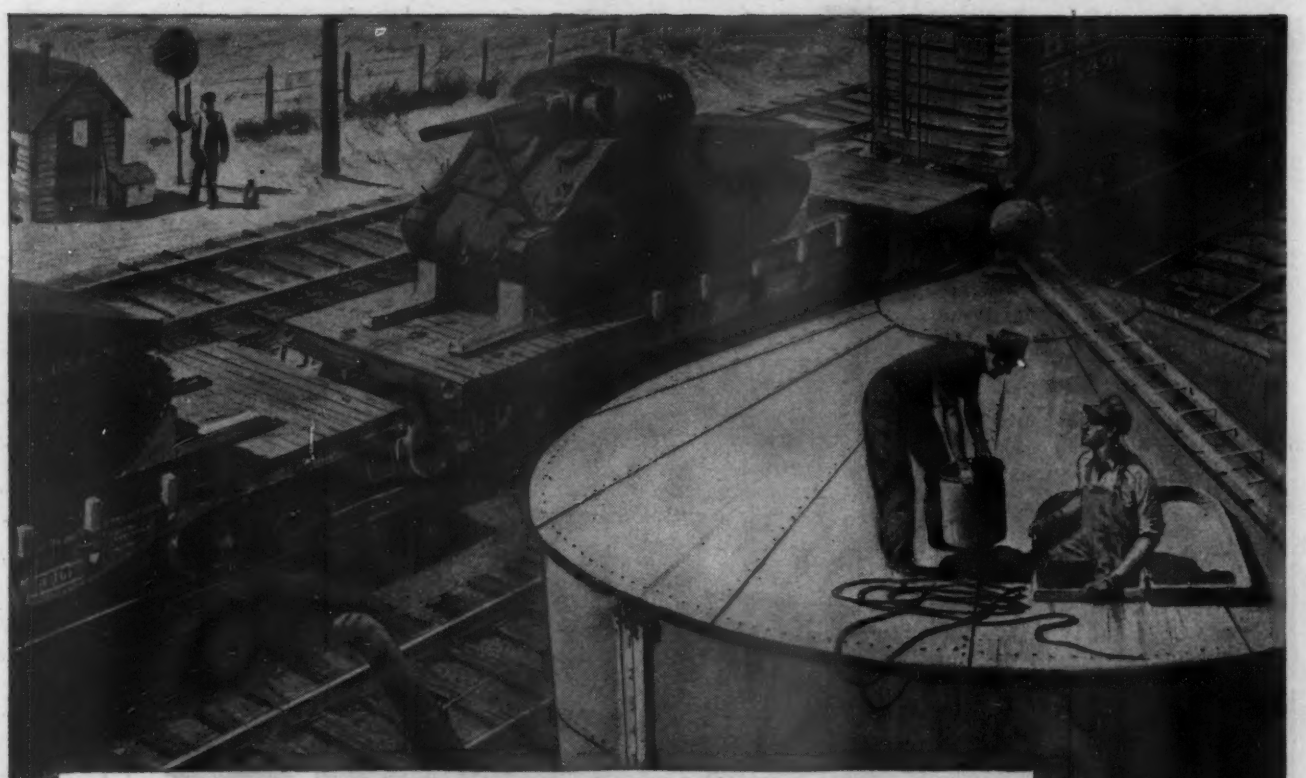
CATERPILLAR TRACTOR CO., PEORIA, ILL.

CATERPILLAR DIESEL ENGINES

REG. U.S. PAT. OFF.

TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

The discharged veteran wears this emblem. Remember his service and honor him.



Longer Protection

for exposed metal surfaces

Exposed to every extreme of weather . . . this water tank is protected inside and out with Flintkote Hydralt Emulsion.

Not only for water tanks . . . but for pipelines, signal towers, bridges, buildings . . .

Any metal or concrete surface exposed to water, weather, corrosive fumes or other destructive factors, can be given durable, longer-lasting, more economical protection with Flintkote Hydralt Emulsions.

These coatings are non-toxic in application, odorless and tasteless. Use them safely anywhere . . . even to protect the inside surfaces of tanks for drinking water.

APPLIED COLD . . .

and applied quickly . . . with trowel, brush or spray . . . Hydralt Emulsions form a durable film of protection that will outlast any other form of asphalt coating. There are many types of Flintkote products for railroad use. Adhesives . . . Asphalt Protective Coatings . . . Building Materials . . . Car Cements . . . Cold Mastic Flooring . . . Sound Deadeners . . . Stock Car Flooring . . . Insulation Coating . . . Waterproofing and Dampproofing Materials.

Write us for more information. Extensive research facilities and more than forty years' experience are at your service.

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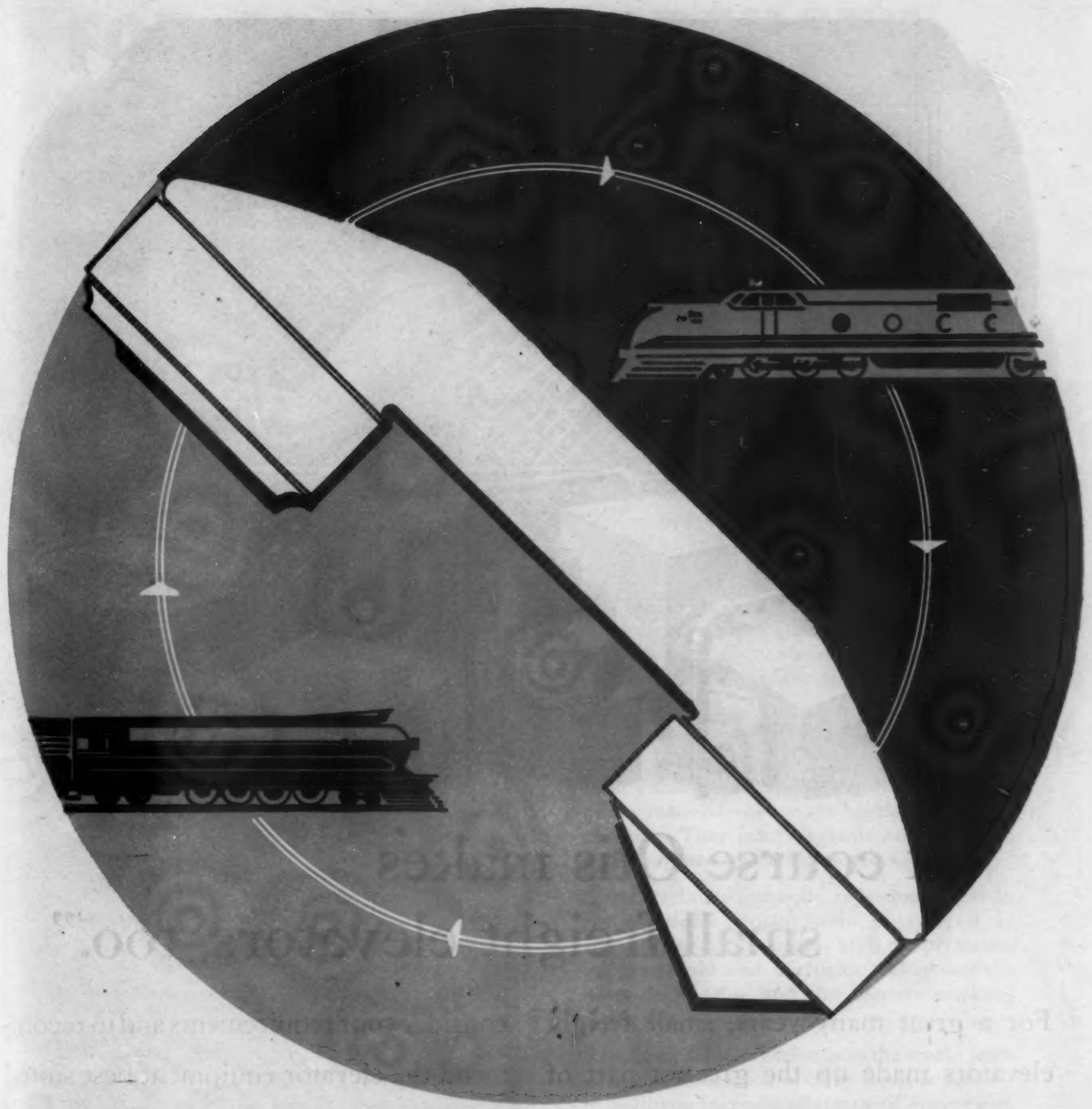

FOR OUR 20-PAGE BOOKLET, "RAILROAD RADIO COMMUNICATIONS," WRITE MAGUIRE INDUSTRIES, INC., BRIDGEPORT, CONN.

INVISIBLY LINKED BY SPACE RADIO

INTER-TRAIN COMMUNICATION enables ... engineer and conductor to report road ... hazards, ... fires and hotboxes to crews ... of other trains in territory not controlled by block ... signals ... crews may maintain safe headway ... between trains by train-to-train communication

Maguire
INDUSTRIES · INCORPORATED
ELECTRONICS DIVISION

SUBSIDIARIES: COLUMBIA MACHINE WORKS, INC., BROOKLYN, N. Y. • MYCALEX CORPORATION OF AMERICA, CLIFTON, N. J. • THORDARSON ELECTRIC MFG. CO., CHICAGO, ILL.

"Of course Otis makes small freight elevators, too."

For a great many years, small freight elevators made up the greatest part of Otis business. Today, they still constitute a large percentage of Otis sales.

Small or large, for two stories or twenty, with Otis freight elevators you are assured of dependable and economical performance.

Your Otis representative is ready now to consider your requirements and to recommend the elevator equipment best suited to your needs. For the finest in vertical transportation tomorrow, call your Otis representative TODAY.

Otis ELEVATOR COMPANY
OFFICES IN ALL PRINCIPAL CITIES

FOR GREATER STRENGTH· *without more weight*

When used for locomotive side rods such as this, Republic Alloy Steels insure highest strength for the weight involved—and provide uniform hardenability that produces wear-resistant surfaces.

–no other material can equal

ALLOY STEELS

When power and speed of locomotives are stepped up—and operating parts such as side rods, pins and bolts must be made stronger without increase in size or weight—it's a job for Republic Alloy Steels.

Alloy steels are the strongest of metals. Their exceptionally high strength-to-weight ratio assures the most efficient combination of these two properties.

But there are other good reasons for your use of alloy steels. They can be hardened uniformly and accurately to the greatest extremes of any material—hence are highly resistant to abrasion. They insure against non-hardened or soft spots in wearing surfaces.

Alloy steels also provide super-toughness to resist sudden shock, strain or reversal of stress. They resist fatigue, high temperatures, sub-zero cold and corrosion. They are the most dependable and the hardest working steels that money can buy.

Republic's wide experience as the world leader in the production of alloy steels is yours—to help you increase efficiency of equipment, to keep it out of the repair shop longer and to cut costs. Write us.

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
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Republic
ALLOY STEELS

Also Carbon and Stainless Steels—Sheets—

Yale Hand Lift Trucks are ruggedly built for long life—provide easy lift, easy roll, easy steer—take the shorter hauls at a fast clip. Wide range of models and capacities for efficient handling of skids, skid bins, and pallets.

Yale Electric Industrial Trucks save time and effort—are power-packed to speed the movement of tremendous tonnage per day—travel fast and maneuver easily in congested areas. High lift models save storage space.

Yale Electric Crane Trucks are highly mobile machines used for speedy, efficient stripping of locomotives as well as for quickly transporting and stacking great tonnage in yard or indoor storage areas.

Kron Springless Dial Scales, made by Yale, eliminate excessive time and money-wasting handling operations, provide accurate, efficient, low-cost weighing and counting of all kinds of materials. Available in all types from bench to crane scales.

Roll out the BINFUL!

Not in pairs or by the dozen, but by the *binful*—those lanterns are speedily and efficiently delivered where needed. But this is only one example of how big-capacity Yale Hand Lift Trucks eliminate costly, time-and-effort-stealing rehandling operations, and wipe out *hidden costs* for American railroads.

In repair shops, stores departments, freight terminals and at way points, Yale Materials Handling Machinery is easing the burden of lifting and transporting enormous wartime tonnage—releasing men and women for more productive tasks. Learn all about cost-cutting, "safety first" Yale Hand Lift and Electric Trucks and Scales. Phone or write the nearest Yale railroad representative—today! The Yale & Towne Manufacturing Company, 4530 Tacony Street, Philadelphia 24, Pa.

RAILWAY REPRESENTATIVES:

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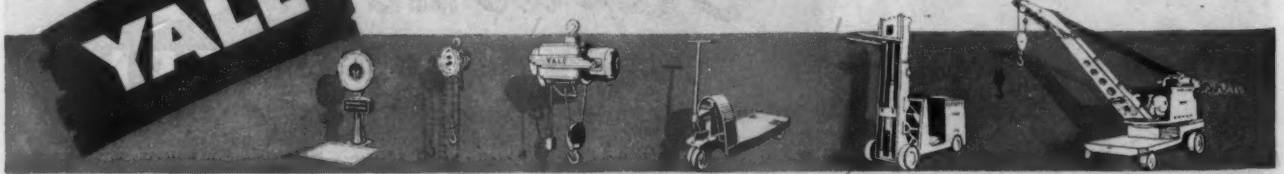
YALE

MATERIALS HANDLING MACHINERY

CUTS PRODUCTION COSTS . . . SAVES TIME . . . SAVES EFFORT . . . PROMOTES SAFETY

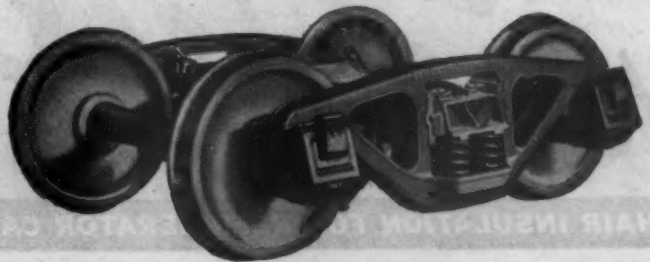


HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC • KRON INDUSTRIAL SCALES

Both the 1939 A.A.R. tests and those subsequently made by A.S.F. have revealed that the two principal requirements for an easy-riding freight car are long-travel springs and proper control of spring action. The modern A.S.F. Ride-Control Truck (A-3) incorporates both of these lading-protecting features.

MINT-MARK OF ⬡ FINE CAST STEEL

A·S·F *Ride-Control* TRUCK



LONG SPRING TRAVEL · CONSTANT FRICTION CONTROL

AMERICAN STEEL FOUNDRIES

CHICAGO

FEWER SPOILAGE CLAIMS

when your cars are insulated

with HAIRINSUL *the* PERMANENT *insulation*

Hair Is Nature's Own Insulation...

It's nature's protective covering for animal life...it's a barrier against extreme outside temperature changes. HAIRINSUL is made of animal hair...one of the best reasons why HAIRINSUL is accepted as the finest of all insulating materials for refrigerator cars.

Perishable lading reaches its destination in better condition protected by ice-saving HAIRINSUL . . . and very often the car gets there sooner because HAIRINSUL's low thermal conductivity means fewer icing stops . . . more cooling efficiency per ton of ice in the car.

HAIRINSUL is *all hair* in flexible blanket form . . . never packs down, never shakes down, separates or pulverizes . . . repels vermin, never rots or decays . . . outlasts the car it insulates. If it should become thoroughly soaked, HAIRINSUL *dries out good-as-new*, retaining its original high efficiency. Write today for samples and complete engineering data.

AMERICAN HAIR & FELT COMPANY
DEPT. C-8, MERCHANDISE MART, CHICAGO 54

Hairinsul

ALL HAIR INSULATION FOR REFRIGERATOR CARS

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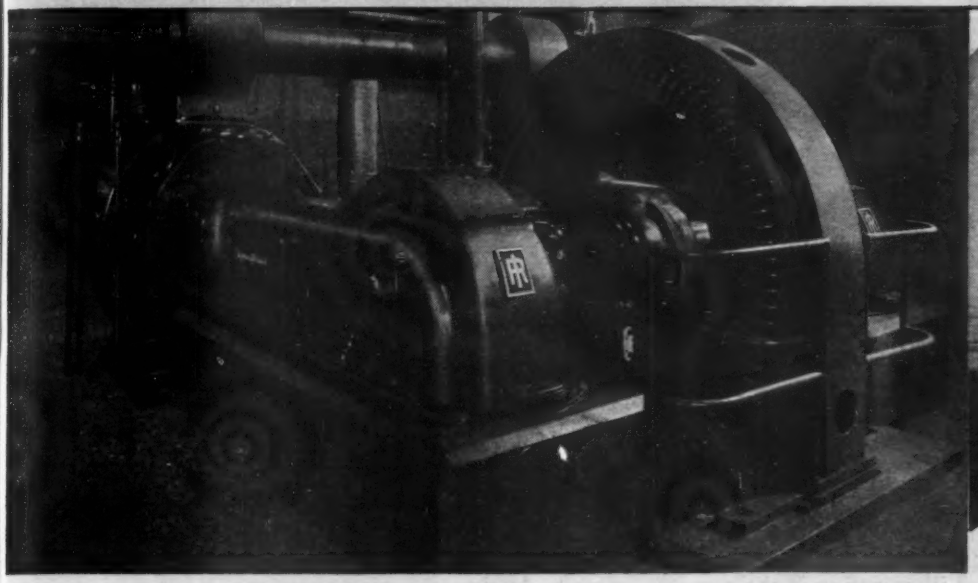
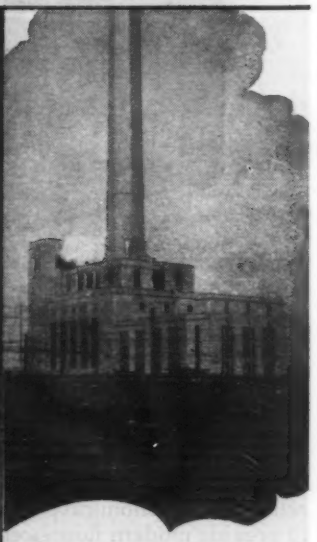
TOR CARS
RAILWAY AGE

VISIONEERING

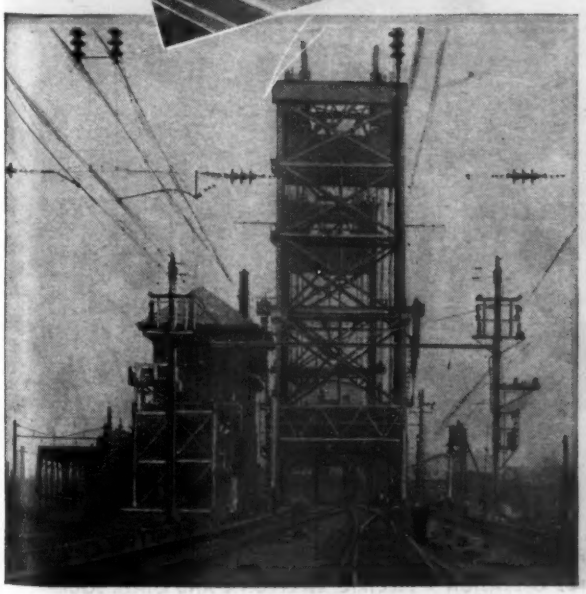
THE ART OF LOOKING AHEAD IN ORDER TO PLAN FOR THE FUTURE





AIR COMPRESSORS

FOR TERMINAL OPERATION



Air Compressors are the backbone of terminal operation — for if they stop — terminal operations stop. One of the largest electro-pneumatic interlocking plants has more levers for operation of switches and signals than any tower ever erected. They obtain their supply of dependable and economical Air Power from two large Ingersoll-Rand PRE Compressors of the type illustrated above.

Similarly, the smaller two-stage, air-cooled compressors provide air for electro-pneumatic interlocking throughout station areas, and for the operation of controllers and locks on track lift span bridges.

Terminal air is also used to speed the making-up of trains, supplying air for cleaning cars, charging train lines, etc. In fact, the uses are so numerous that any "Visioneering" should include air compressors and air tools and the ways in which these will improve railroad service, reduce manual fatigue, offset rising costs and increase productiveness of labor and equipment.

Our engineers will be glad to study your problem and help you to select the compressor which best suits your conditions. There is a size and type for practically every railroad application.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

1-701

FOR RAILWAY FLUORESCENT LIGHTING

A VIBRATOR POWER SUPPLY IS A *Must*

E-L Vibrator Power Supplies are the most efficient, reliable and economical power conversion equipment to provide modern fluorescent lighting and two-way radio operation on all railroad trains. Fluorescent lighting will be the preferred illumination in the new or converted lounge, dining and coach cars because tests and surveys have shown that passengers definitely want this more efficient type of lighting.

To the railroad operator, this means not only increased passenger satisfaction, but also greater lighting efficiency and economy because fluorescent lamps provide twice as much light as incandescent lamps of equivalent wattage.

Vibrator Power Supply units are also available to give you any necessary voltage for the operation of radio-telephone installations, electric razors and standard broadcast receivers.

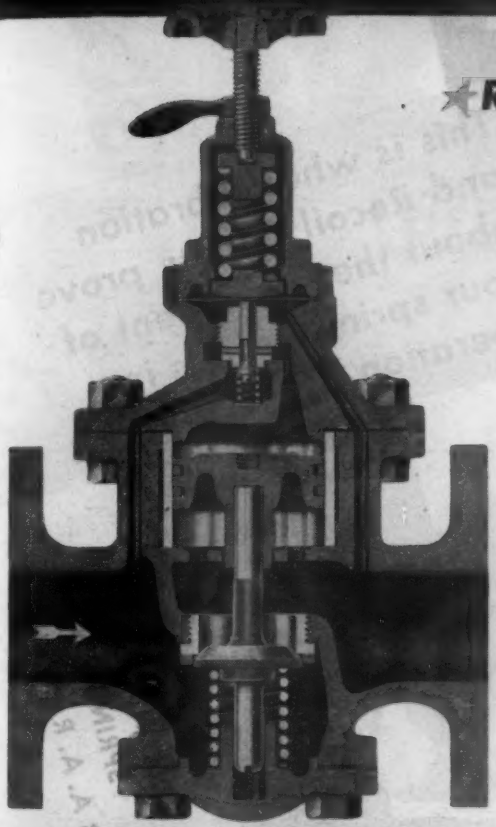
SPECIALLY DEVELOPED POWER CONVERSION SYSTEM—To make possible fluorescent lighting in railroads. Electronic Laboratories has developed a compact, lightweight power conversion system, which permits the operation of ten 42" "slim-line" fluorescent lamps (two circuits of 5 each) from 32 volts DC or any other input voltages desired. Multiple units may be used for larger numbers of lights. It provides over 30 lumens of light per input watt. This system incorporates dual series circuits, and the simplicity of series wiring. At the same time, however, it allows individual lamp control through an arrangement for short circuiting any desired lamp in the series string. The system automatically adjusts to the new load. A constant level of light is assured, regardless of input variations, because the unit is current regulated.

E-L Power Conversion Units have been thoroughly proven in actual installations to be highly efficient and to require a minimum of maintenance.

E-L FLUORESCENT POWER SUPPLY • MODEL 2026—This model (shown above) operates ten 42" "slim-line" fluorescent lamps. Available for the following input voltages: 12, 24, 32, 64, 110 or 600 volts DC. Provides instantaneous starting and high efficiency. Dimensions: 14⅝ x 13 x 8 inches.

VIBRATOR POWER SUPPLIES FOR LIGHTING, COMMUNICATIONS, ELECTRIC MOTOR OPERATION • ELECTRIC, ELECTRONIC AND OTHER EQUIPMENT

Leslie Regulating Valves

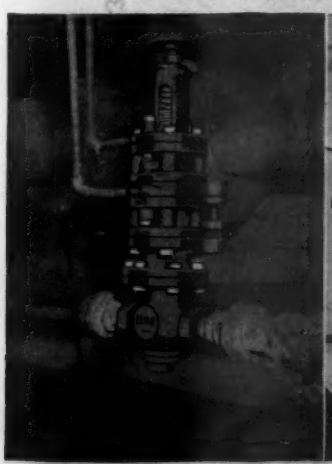


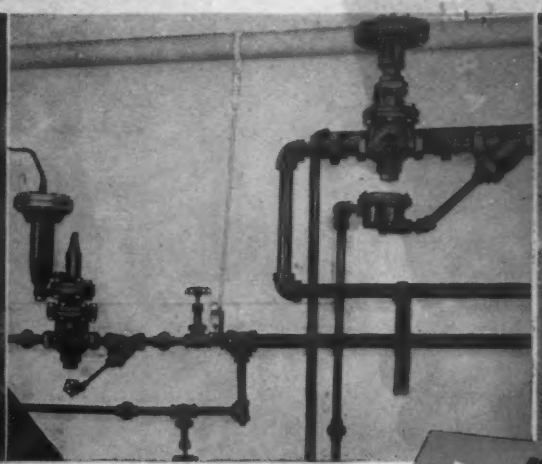
★REDUCE MAINTENANCE
★PROVIDE CLOSER CONTROL AT WHITE LABORATORIES!

WHITE LABORATORIES can tolerate no deviation from set process steam pressures, in spite of widely fluctuating loads, in the manufacture of its vitamin products and other pharmaceuticals. At the same time, maintenance must be kept within reasonable limits.

TO REDUCE FREQUENT AND COSTLY REGULATOR MAINTENANCE, Norman E. Smith, Chief Engineer, began installing Leslie products back in 1932. Now there are 60 Leslie Pressure Reducing Valves in the Boiler House, Manufacturing Plant, Compressed Air and Air Conditioning Systems—as well as Leslie Pump Governors and Leslie Temperature Regulators. Yet only one Leslie product has needed a major repair in these twelve years.

THE PRINCIPLE OF THE SPRING-LOADED INTERNAL PILOT, PISTON-OPERATED VALVE, developed by Leslie, is responsible for this combination of ruggedness with unusual sensitivity and accuracy. The bronze body valves are of 88-10-2 composition, enabling them to withstand pressures to 300 p.s.i. and temperatures to 550 degrees F. Cast steel valves are designed for 600 p.s.i. and temperatures to 750 degrees F. The main valve seats are Stellited to 600 Brinell and the main valves are surface hardened to 800 Brinell.





(Left, above) WIDE LOAD CHANGES demand fast acting, accurate pump governors such as this Leslie, standard equipment for White Laboratories fuel oil and feed water pumps.

(Center, above) LESLIE TEMPERATURE REGULATORS employed in White Laboratories include the self-contained unit at the left and the auxiliary operated unit at the right.

(Right, above) LESLIE PRESSURE REDUCING VALVES get many unusual jobs at White Laboratories. Here, in the oil feed line, a J-1 model safeguards the air conditioning air compressor from shut-downs.

ESTABLISHED 1909

LESLIE

REGULATING VALVES
LESLIE-TYFON WHISTLES

LESLIE CO. • LYNDHURST • NEW JERSEY

Blackout THIS CONDITION!

This is what Vibration and Recoil Curves prove about the movement of your spring groups in operation.

Style A-6-A Holland *Volute* Snubber Springs

HOLLAND COMPANY

332 SOUTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

Good Passenger Seating

Now and in days to come, good passenger seating is important to the railroad and to the railroad's customers. Economy is vital to the railroad—comfort is a requirement for the passenger.

COACH & CAR

is an exclusive builder of well designed railroad seats that are:

. . . . low in first cost
. . . . economical to maintain
. . . . complete in passenger comfort
. . . . simple in construction
. . . . available in numerous styles and colors

All seats fully covered by patents.

COACH & CAR EQUIPMENT CORP.

2860 S. QUINN ST., CHICAGO 8, ILLINOIS

FACT OR FICTION? It's a

A 47-SECOND QUIZ ON RAILROAD DETECTIVE

Q. Stealing of freight ... other railroads makes heavy work ... Pacific's car tracers. Fact or fic...

... railroads freely exchange freight cars . . . thus, other lines make extensive use of N. P. equipment. However tracers keep close tab on all 39,000 N. P. cars.

Q. A common variety of plant makes smart thieves wary of Northern Pacific freight cars. Fact or fiction?

A. Fact. *Plant*, in crooks' lingo, means an undercover police guard. Scores of railroad policemen protect the millions of dollars worth of goods moved yearly via Northern Pacific.

Q. Mysterious, X sometimes found on N. P. rails is secret sign of well known gang of saboteurs. Fact or fiction?

A. Fiction. This marking is made by a patrol car with electronic detector, which instantly puts the finger on any hidden flaw in track, marks the spot with paint to guide repair crew.

Q. "Platform snooper" frequently seen poking around train trucks is hunting stowaways. Fact or fiction?

A. Fiction. He is checking journal boxes to see whether wheel bearings need oil, packing or new "brasses". All Northern Pacific trains are inspected, to forestall hotboxes.

Q. N. P. "freight detectives" have uncanny ability to predict movement of products of Northwest states. Fact or fiction?

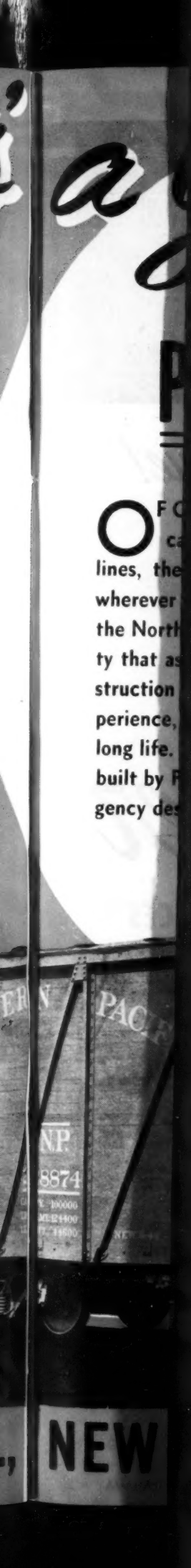
A. Fact. They're the friendly, competent Northern Pacific traffic agents . . . confidants and counselors to a host of shippers along the Main Street of the Northwest.

NORTHERN PACIFIC

Main Street of the Northwest

Traffic moves fast and smoothly on the 1,904 mile long Main Street of the Northwest—a vital link in the nation's vast rail transportation system that makes America strong and self-reliant.

PRESSED STEEL CAR COMPANY, INC.,


NEW

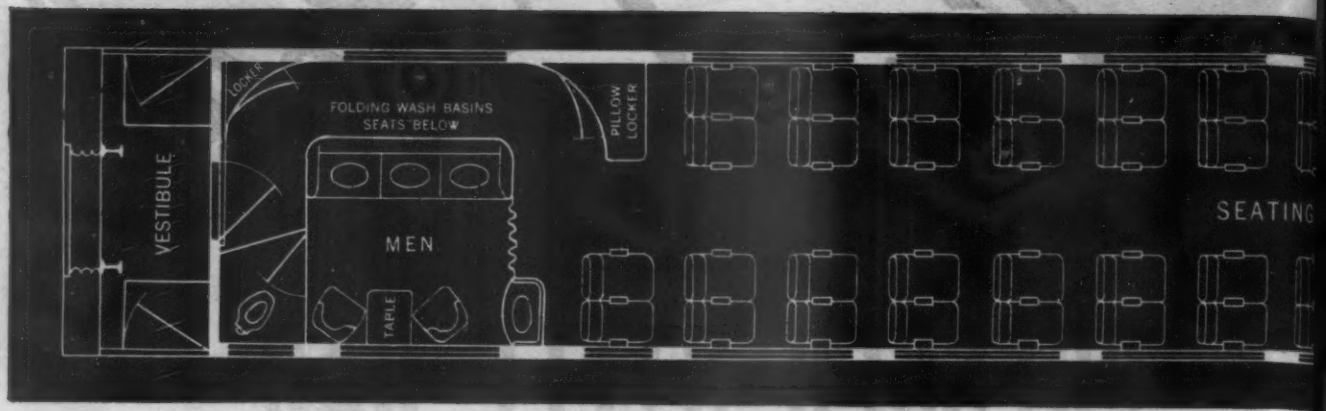
a Good "Steal"

IF BUILT BY

PRESSED STEEL CAR

OF COURSE, all U. S. railroads freely exchange freight cars. But when railroad cars which were built by Pressed Steel Car wander from their own to "foreign" lines, they're always a good "steal" because their performance is so outstanding wherever they go. On the Main Street of the Northwest Pressed Steel's cars help the Northern Pacific deliver a dependable transportation service with maximum safety that assures the prompt delivery of war and civilian supplies. Their rugged construction and durability, based upon many years of "know-how" car building experience, enable them to deliver a satisfactory money-saving service during their long life. The 50-ton single sheathed composite box cars as illustrated below, were built by Pressed Steel Car for the Northern Pacific according to the A. A. R. Emergency design specifications.

NEW YORK–PITTSBURGH–CHICAGO



A revelation in railroading for revenue!

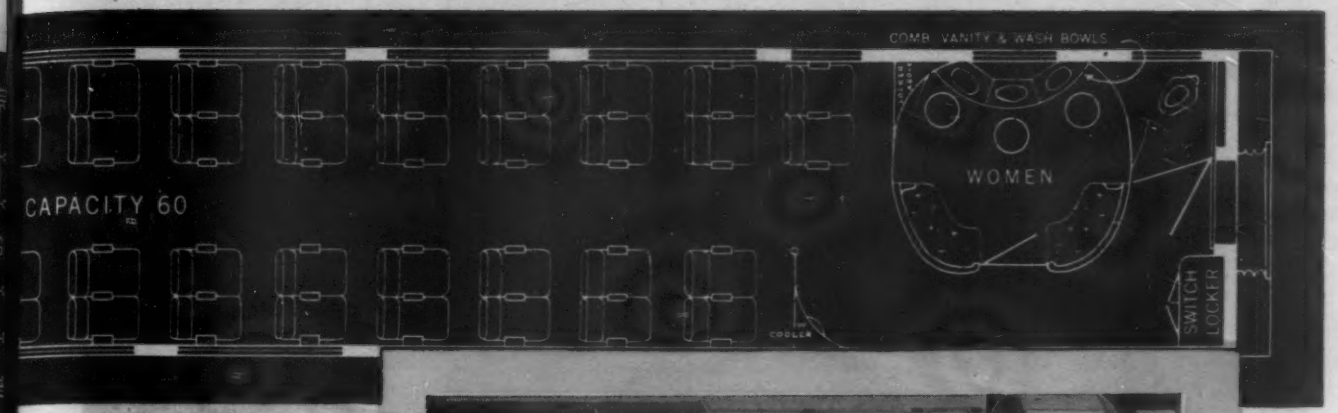
a.c.f. PRESENTS THE

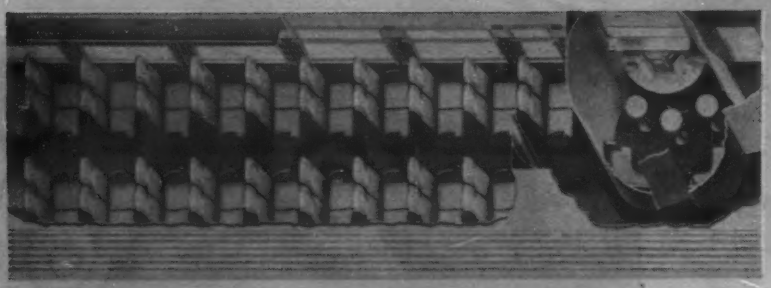
Slumberliner

DUAL-PURPOSE CAR OF MANY ADVANCES*

"Convertibility" keynotes the Slumberliner! As its name signifies, it is designed for long haul, day-night service but a.c.f. has carried dual-purpose *far beyond* the development of merely another conventional coach by day — reclining chair sleeper by night. Look for the wizardry of folding washstands that disappear into the wall after the morning's rush is over with a 3-seater couch appearing in their stead . . . or in the ladies' room, the three-place vanity with wing mirrors, which becomes three wash basins when the table tops are individually lifted . . . the dual-purpose baggage racks which actually aid and complement the most modern of fluorescent lighting systems, scientifically correct to provide against eye-strain . . . new daylighting featured by

*Watch for future description of these advanced features.





fixed louvres in upper window areas to reflect light into the car even though all drapes may be drawn across the windows.

All of these advances and many more may be had in the Slumberliner — car with the *1960 look* and appeal. Yet, A.C.F. neither designs nor builds for novelty's sake alone. These advances are in answer to definite needs for greater passenger comfort and convenience and the over-all great objective of maintained patronage for the railroads. In this spirit A.C.F. has designed the Slumberliner as a car that will both wear well *with the traveler* and wear well on *the rails!*

AMERICAN CAR AND FOUNDRY COMPANY

NEW YORK • CHICAGO • ST. LOUIS • CLEVELAND • WASHINGTON
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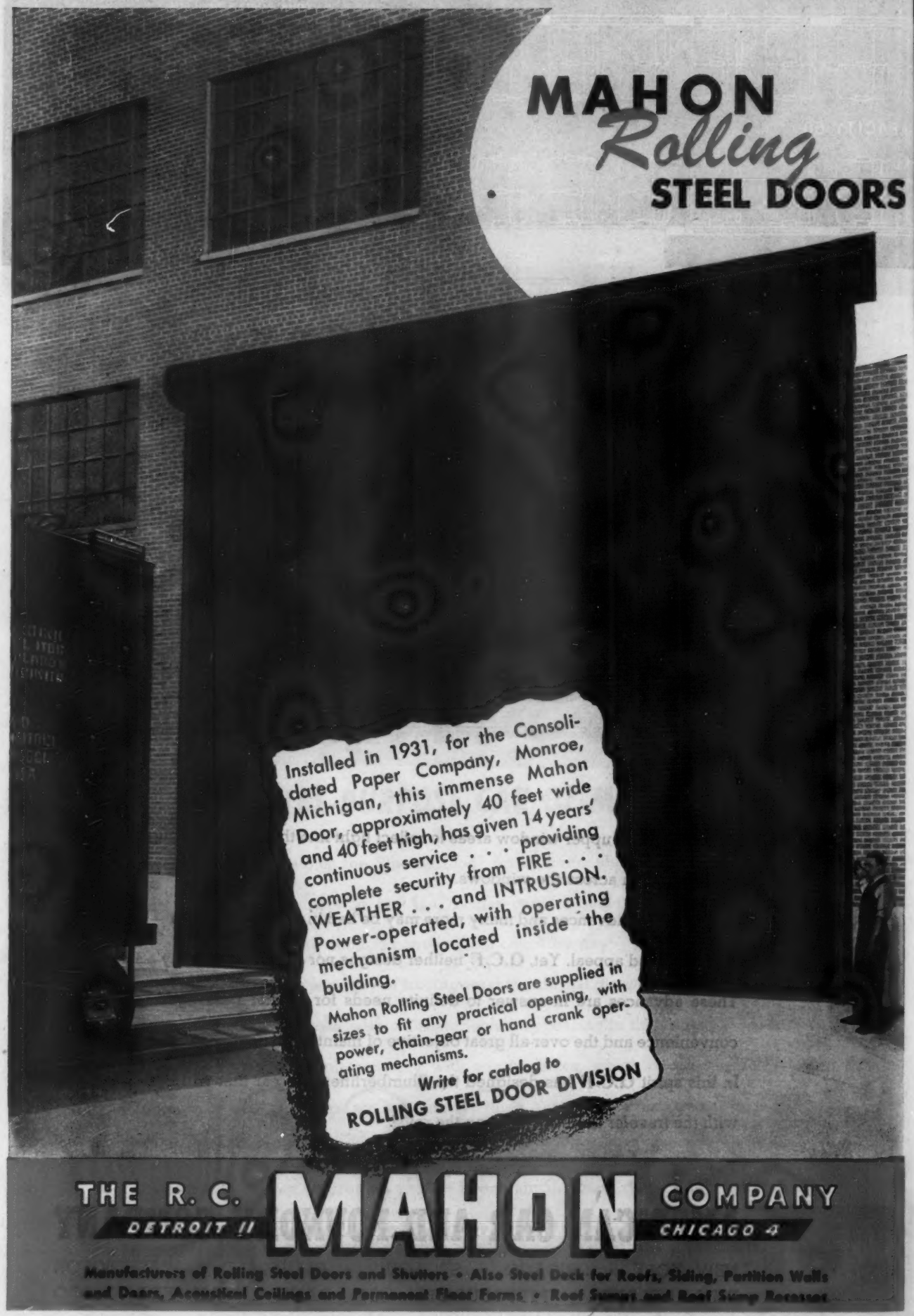
MAHON
Rolling
STEEL DOORS
Installed in 1931, for the Consolidated Paper Company, Monroe, Michigan, this immense Mahon Door, approximately 40 feet wide and 40 feet high, has given 14 years' continuous service . . . providing complete security from FIRE . . . WEATHER . . . and INTRUSION. Power-operated, with operating mechanism located inside the building.
Mahon Rolling Steel Doors are supplied in sizes to fit any practical opening, with power, chain-gear or hand crank operating mechanisms.
Write for catalog to
ROLLING STEEL DOOR DIVISION
THE R. C. MAHON COMPANY
DETROIT 11
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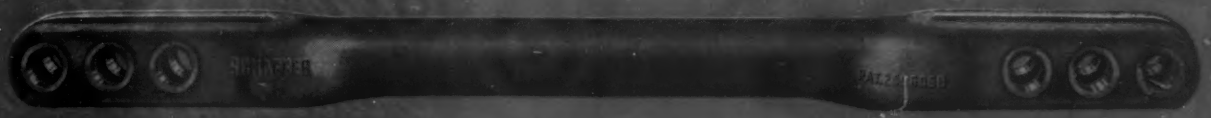
Manufacturers of Rolling Steel Doors and Shutters • Also Steel Deck for Roofs, Siding, Partition Walls and Doors, Acoustical Ceilings and Permanent Floor Forms • Roof Sumps and Roof Sump Receivers

Schaefer CONNECTIONS



LIGHT WEIGHT... FULL STRENGTH-PLUS
For Every Type of Freight Car

● The introduction of Schaefer hollow-forged Truck Lever Connections thirty-odd years ago eliminated many of the trouble factors then commonly experienced.

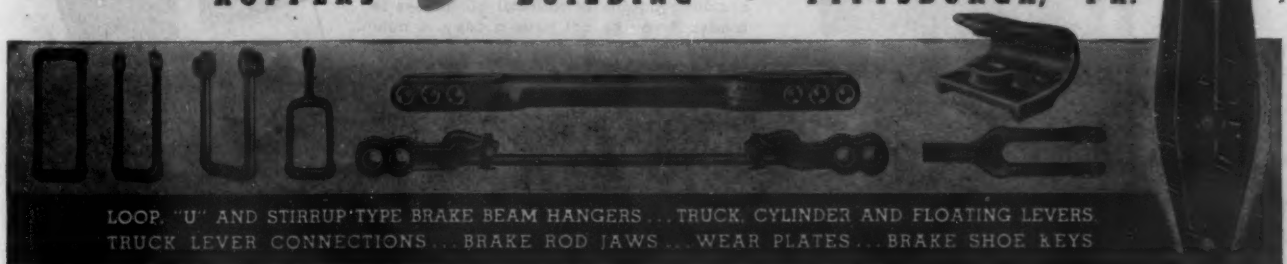
Since their introduction many improvements have been made in the original design, and many new styles and sizes have been engineered and placed in production. The use of the hollow section for "light weight-full strength-plus," however, remains because of its higher efficiency and flexibility in design.

There's a Schaefer Connection for every type of freight car and engine tender—all described and illustrated in the new Schaefer Catalog. In your engineering, purchasing, stores and repair departments this catalog will prove a real time saver. Ask for a copy today.

Send for **FREE** *Catalog*

Schaefer EQUIPMENT COMPANY

KOPPERS BUILDING • PITTSBURGH, PA.



LOOP, "U" AND STIRRUP-TYPE BRAKE BEAM HANGERS... TRUCK, CYLINDER AND FLOATING LEVERS
TRUCK LEVER CONNECTIONS... BRAKE ROD JAWS... WEAR PLATES... BRAKE SHOE KEYS

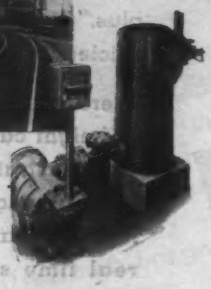
Like Most Railroads...

the "ERIE" chooses Bowser

At the modern shops of the ERIE at Marion, Ohio Diesel fuels and lube oils are handled efficiently and safely with Bowser Systems.

DIESEL FUELING and LUBE OIL SYSTEMS

FOR SPEED, ACCURACY, CONVENIENCE



The Bowser Meter with Printing dial, located in the pump house, above, provides accurate measurement and a printed record of every fueling operation.

Keep 'em rolling! Faster schedules . . . more frequent runs . . . greater comfort—those are the railroads answers to the challenge of changing America's transportation habits. In the Dieselized era . . . just ahead . . . speed in fueling, accurate control of costs, dependable operating and maintenance data will be of prime importance in efficient operation. That's why many roads are looking ahead in planning fueling and lube oil facilities . . . and why they are calling in Bowser to help them. A staff of trained engineers, experienced in designing individualized systems, is ready to serve you at any time, without cost or obligation, in the proper selection of equipment for bulk handling and dispensing of fuels or lube oils.

LUBE OIL SERVICE

Lube oils, accurately measured by a Bowser meter, are placed in the engines at this serving center.

Your Copy...

Of the Bowser Catalog of equipment for storing and dispensing Diesel fuel and lube oils . . . and of time-proved equipment for handling liquids in railroad oil houses is ready. If you do not have a copy, a note will bring one immediately.

BOWSER, INC.
FORT WAYNE, INDIANA

BOWSER ESTABLISHED 1885

PIONEER MAKER OF OIL HOUSE FUELING & LUBE OIL SYSTEMS

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A. A. R.
PECIFICATIONS
M-901-41
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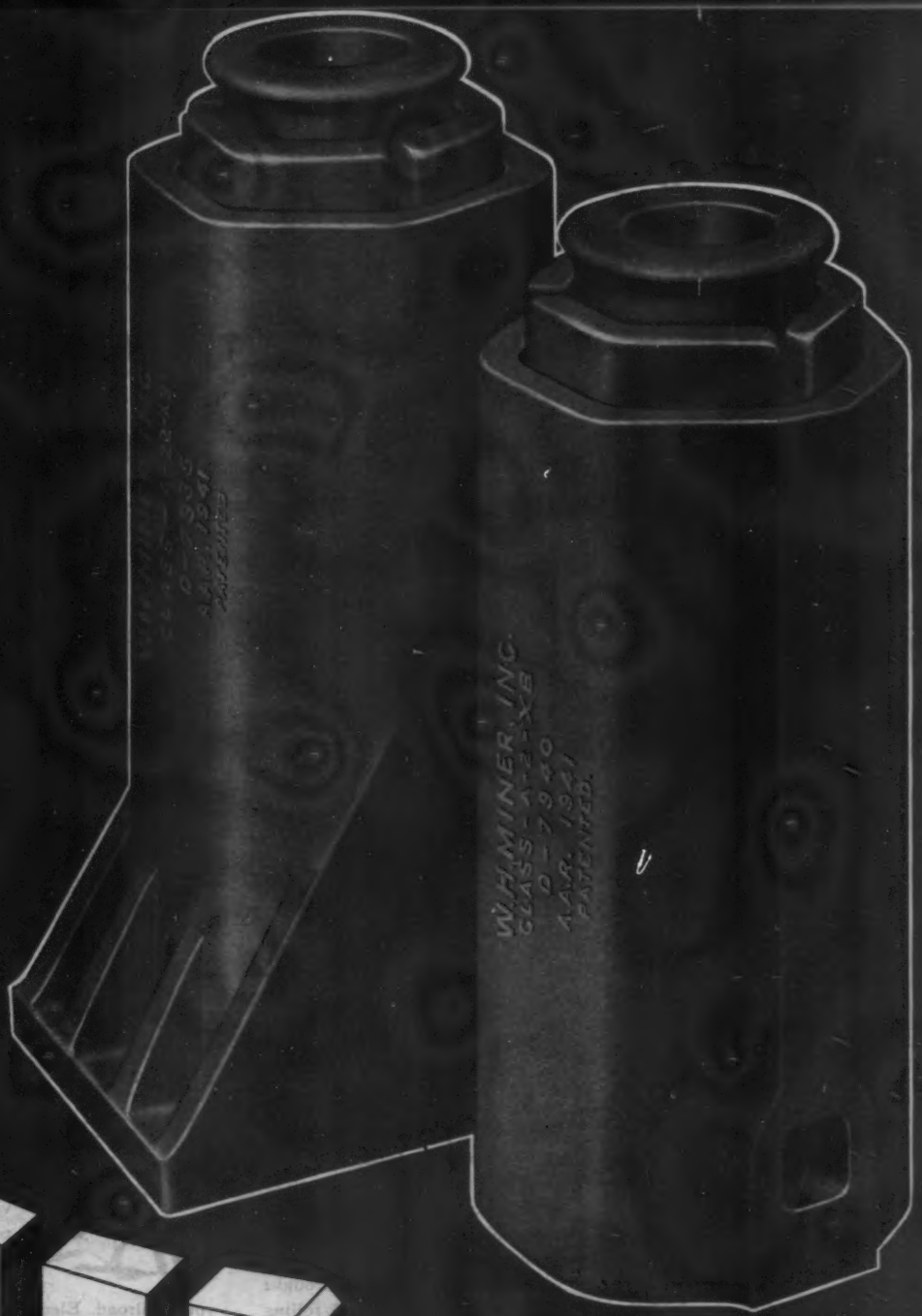

MINER

OVER 50 YEARS OF PROOF . . . THAT "Preferred" SERVICE IS READY FOR THE BIG POSTWAR JOB

Preferred by Management

Under specific kinds of operating conditions, Electrification provides improved train operations through: faster schedules . . . smoother handling . . . greater reliability and flexibility . . . increased train tonnage and track capacity.

Reduced operation cost through: lower maintenance cost for motive power and rolling stock . . . less locomotive terminal time and expense . . . elimination of large coal and water facilities . . . more efficient use of coal to *produce* electric power.

Preferred by Shippers

Where traffic is congested, where grades are exceedingly heavy, where hauls must be made in record time, Electrification provides faster scheduling, more expeditious point-to-point handling, for the shipper—at a *lower* operating and maintenance cost for your railroad. Electrification also presents an excellent opportunity for railroads to capitalize on their greater independence of weather, as well as their more central shipping and receiving facilities.

A FEW OF THE RAILROADS USING *Electrification* TO BEAT THE COMPETITION

THE BALTIMORE AND ANNAPOLIS RAILROAD COMPANY

ILLINOIS CENTRAL

CHICAGO MILWAUKEE ST. PAUL AND PACIFIC

GREAT NORTHERN RAILWAY

WESTINGHOUSE

Westinghouse

FOR OVER SIXTY YEARS THE BEST KNOWN NAME IN

WITH *Electrified Operation*

—TO ASSURE POSTWAR PROFITS

CONSULT WESTINGHOUSE ON ELECTRIFICATION BENEFITS FOR YOUR RAILROAD

In 1893, when the Empire State Express "999" made the first recorded run at a speed of more than 100 miles per hour, Westinghouse made its first electric locomotive.

Since then, Westinghouse has been working with many railroads on both inauguration and extension of Electrification where it pays the biggest dividends... whether from competitive, operating efficiency or lower cost and maintenance standpoints. Electrified Operation became "Preferred Service"—preferred by passengers . . . shippers . . . and management.

Westinghouse engineers are ready to discuss where and how "Preferred Service" will assure Postwar Profits for *your* railroad. Call your Westinghouse office or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-95102

Preferred by Passengers

Faster scheduling . . . smoother rides, smoother stops and starts . . . greater reliability . . . cleaner operation and interiors . . . these are but a few of the reasons why Electrified Operation is *preferred* by passengers.

Many "war-born" or "postwar-planned" communities now dependent on slower, less comfortable or less dependable modes of transportation will welcome cleaner and quieter Electrified Operation. These communities represent an additional source of postwar traffic freight and passenger revenue.

OF THE SKYWAYS OF THE HIGHWAYS OF THE WATERWAYS

P.R.R. · N&W RAILWAY · P.R.R. · Reading lines · SAFETY FIRST VIRGINIAN RY.

Railroad Electrical Equipment

GENERAL MACHINERY CORPORATION

PRODUCERS OF HAMILTON STEAM AND DIESEL ENGINES,

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THE NILES TOOL WORKS CO. • THE HOOVEN, OWENS, RENTSCHLER CO. • GENERAL MACHINERY ORDNANCE CORPORATION

Cushioned movement reduces wear

CRECO
Brake Beam
SUPPORTS
lower the cost of brake rigging maintenance

Creco Brake Beam Supports hold brake rigging in alignment . . . brake heads are maintained concentric with the wheel . . . hangers and levers are protected against vibration and wear.

The resilient supporting arms upon which the brake beams ride not only absorb vibration and shock . . . they also prevent the beam from falling.

CHICAGO RAILWAY EQUIPMENT CO.
McCormick Building, Chicago

MORTON "OPEN GRIP" RUNNING BOARD

. . . Safer . . . Stronger . . . Easier to Use

"Open Grip" Running Board provides maximum safety because there are no welds, rivets or lock joints to work loose. Each easily handled, full-width section is a *single piece* of metal.

"Open Grip" has a substantial area of open space. These circular openings are formed with rounded edges and a flange that makes "Open Grip" Tread far stronger than sheet from which it is made.

Its light weight, plus the simple fastening device used, makes "Open Grip" Tread very easy to install quickly. No special tools are required and new cars or re-conditioned equipment may be fitted with a minimum of labor.

Write today for complete information on this low-cost self-clearing, anti-slip surface. "Open Grip" meets requirements specified in letter circular No. D.V.-1054 of the A.A.R. We can make reasonably fast delivery.

This close-up shows how simple it is to install "Open Grip." The cup and bolt device fits any circular opening of the tread. Slotted bolt hole, plus rotation of cup, compensate for any drilling variations, do away with need for precision work when installing.

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MORTON MANUFACTURING CO.

5105 WEST LAKE STREET • CHICAGO 44, ILLINOIS

A PERFECT PATTERN FOR PROFIT

MASSACHUSETTS MOHAIR IS

DURABLE

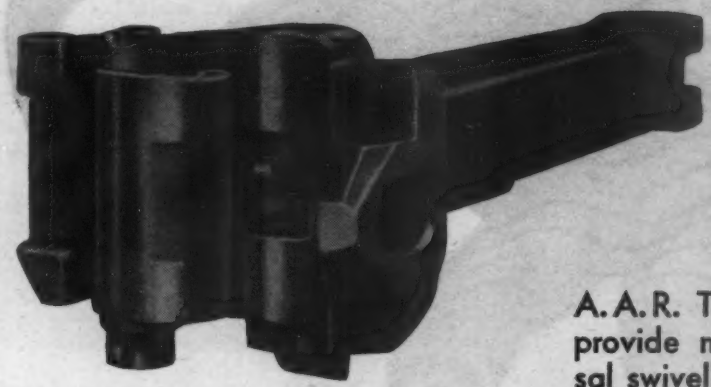
The excellent wearing qualities and lasting beauty of Massachusetts Mohair fabrics have been proven by year-in, year-out service on the nation's leading railroads under any and all conditions for many years. The wide variety of weaves and textures offered by Massachusetts Mohair has long been a favorite of leading designers of coach and car interiors. This lasting beauty in upholstery fabrics will be an important factor in post war passenger relations. That's why passenger-conscious railroad men are making Massachusetts Mohair an integral part of their post war car interior planning!

DISTINCTIVE FABRICS MMP Co Mass Mohair

MASSACHUSETTS MOHAIR PLUSH CO.

BOSTON, MASS.: 80 FEDERAL ST. • NEW YORK CITY: 2 PARK AVE. • PHILADELPHIA, PA.: BEURY BLDG.
CHICAGO, ILL.: 80 E. JACKSON BLVD.

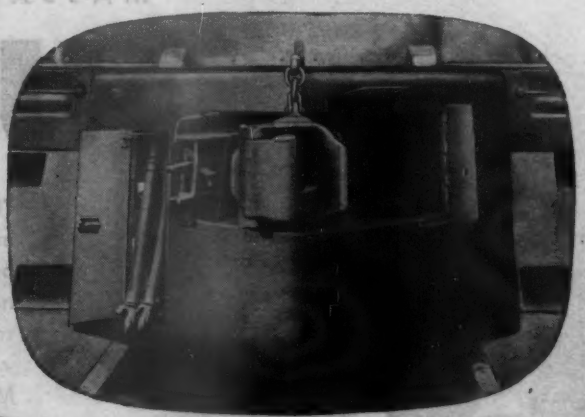
The Buckeye Steel Castings Company



A.A.R. Type "H" Tightlock Coupler eliminates free slack in coupler contours—reducing end shocks. Interlocking features provide maximum safety.

A.A.R. Tightlock Coupler Attachments provide maximum strength and universal swivel with minimum wear.

Retractable Pilot Couplers and cast steel deflecting pilots provide important safety features and simplify streamlining of locomotive pilots.



Manufacturers of Couplers, Truck Frames and Bolsters, Draft Attachments and Tender Trucks

NEW YORK **COLUMBUS, OHIO** CHICAGO

11809

KEEPING PACE WITH TRANSPORTATION PROGRESS . . .

KEEPING PACE WITH TRANSPORTATION PROGRESS . . .

SYPHON LOCOMOTIVES ARE BETTER

Syphons produce more boiler capacity with **less weight, less steel, less labor and less cost,** and for equivalent results assure greater economy in service and maintenance than larger boilers without Syphons, plus safety from boiler explosion.

New Locomotives recently delivered to the Richmond, Fredericksburg & Potomac Railroad are Syphon Equipped

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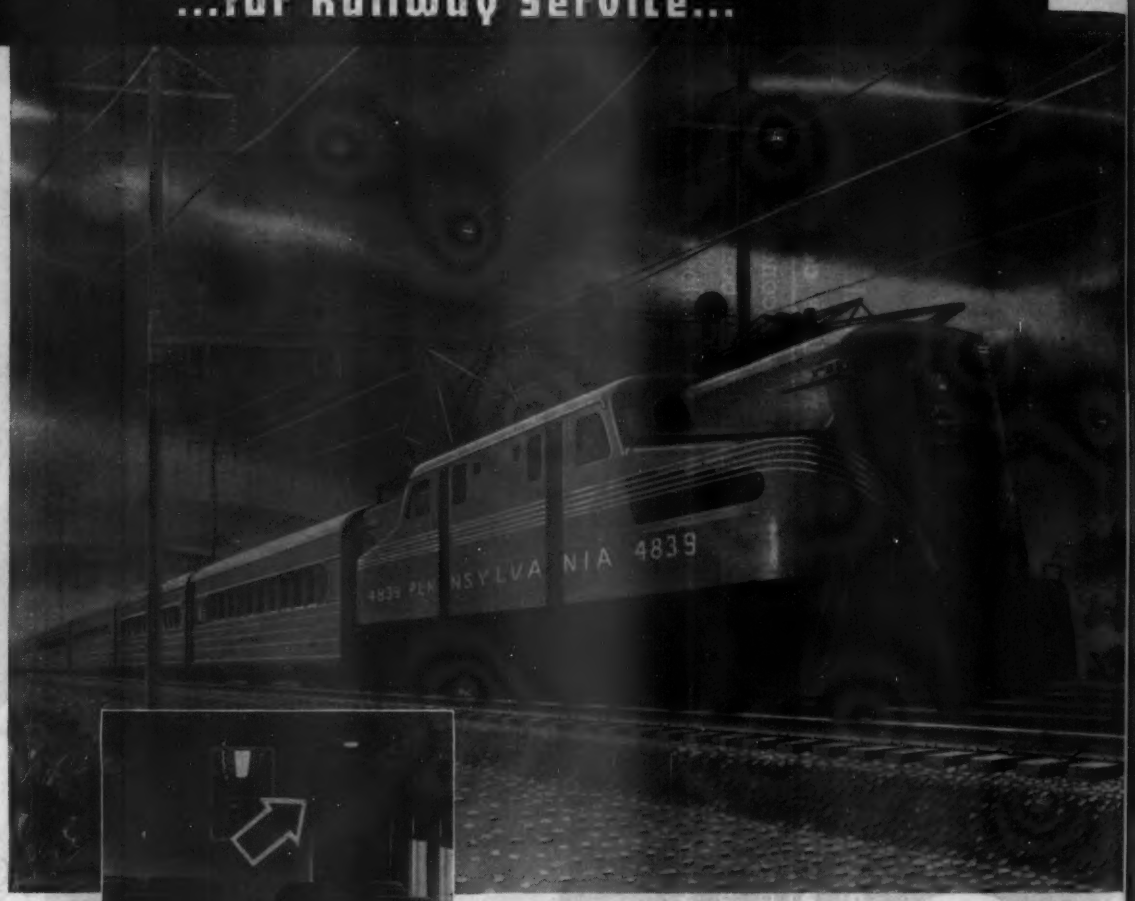
25,972 SYPHONS IN 10,933 LOCOMOTIVES ON 190 RAILROADS

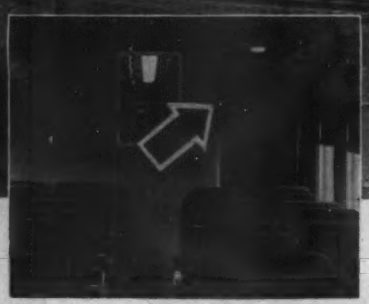
Locomotive Firebox Company

PHILADELPHIA CHICAGO MONTREAL

BARBER-COLMAN GRILLES

...for Railway Service...

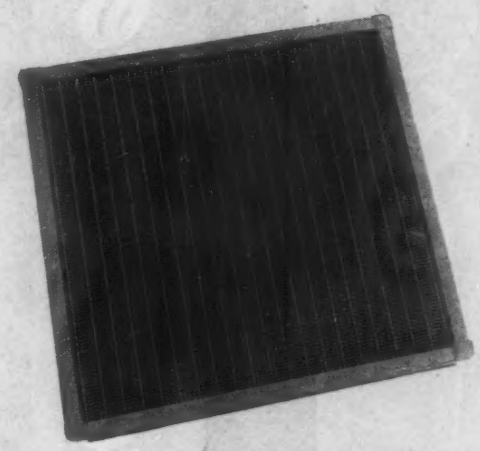




Passageway view shows the location of the Barber-Colman Return Air Grille.

PENNSYLVANIA'S STREAMLINED TRAIL BLAZER USES *UNI-FLO* GRILLES

AN important item in the air conditioning system on the coaches of the Pennsylvania Railroad's popular Trail Blazer is the Barber-Colman return air grille. It is located in the passage as shown. The unit is fabricated with an integral filter box, hinged so that it can be conveniently cleaned, and filters replaced when necessary. Barber-Colman UNI-FLO Railway Grilles are fabricated of sheet steel. The core construction is rigid. The fin strips are folded and have pressed-in support bars to give a firm interlocking assembly. Write for data.



The Barber-Colman Return Air Grille used in the Pennsylvania *Trail Blazer* coaches. Note the fin construction and support bars. The unit is rigid, rattleproof, and easy to clean.

BARBER-COLMAN COMPANY
Rockford, Illinois

SOMETHING BETTER TO SIT ON by FIRESTONE

FOAMEX* cushioning upholstered in VELON*

Here's the perfect team for transportation seats—the deep-cushioned ease of *Foamex*, Firestone's latex foam—the eye appeal of *Velon* upholstery fabric.

The cross-sectioned *Foamex* seat shows the countless air-and-latex bubbles that float your passenger to rest on a cloud of buoyancy. Each tiny bubble has the perfect *softness* of air plus the permanent *resilience* of rubber latex—and there are millions in every ounce of *Foamex*. They add up to cushioning power so great the Army and Navy use *Foamex* to shield men from concussion.

Foamex breathes! Those air-cushions ventilate themselves—keep the seating air-cooled, air-cleaned. And they're all welded together—every *Foamex* seat or back is a single unit. No bulky upholstery innards—no lumping or sagging. No wonder *Foamex* swallows upkeep costs as efficiently as it gobbles up vibration and shock. And now electronic processing gives *Foamex* even longer wear.

***Velon* beauty completes the picture**—makes *Foamex*-cushioned seats look as wonderful as they feel. You can use the lightest, brightest colors in a wide variety of weaves and textures to sparkle up your passenger car interiors. Glamorous seat coverings, curtains, shades and wall trim—a complete "interior of *Velon*"—all completely practical. For grease gets no foothold, grime can't cling to the nonporous *Velon* threads. One quick wipe of a cloth dampened with water or cleaning fluid instantly restores the bright new beauty of *Velon*.

***Velon* is almost wear-proof!** Expose it to the broiling sun—its brilliant colors will not fade. It can't snag or scuff. It has all the "give" you need for latex foam cushioning. Yet it will never buckle, bag or grow permanently out of shape.

Years of wartime abuse on railroads, bus and air lines have yet to affect the comfort and contours of a *Foamex* cushion or the beauty of *Velon*.

Lure your passengers with the glamour of *Velon*. Keep them coming back with the luxury of *Foamex* seat cushions. Both are still at war. Write now to Firestone Tire & Rubber Co., Akron, Ohio, for complete details on these materials.

* Trade Mark

BEST TODAY... STILL BETTER TOMORROW

Firestone

Listen to the Voice of Firestone Monday Evenings Over NBC

Controls the air

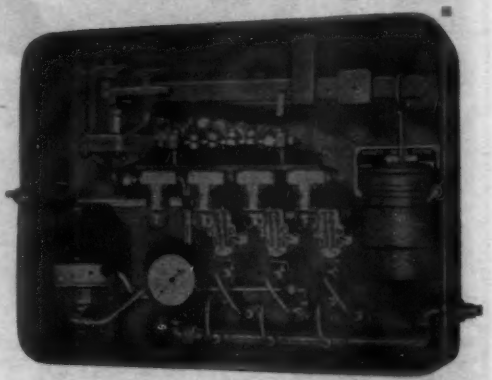
...TO FIT YOUR NEEDS!

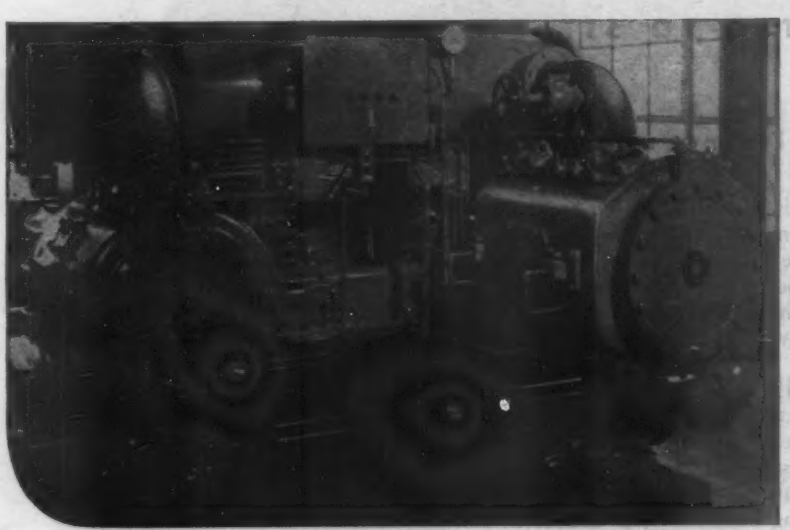
Control of the air—regulation of the flow. Here is a vitally important factor in operating efficiency of a compressor.

You get that positive control in the Gardner-Denver "HA" Horizontal Two-Stage Compressor. Designed for heavy duty, continuous service, the air output of the "HA" is automatically regulated to fit your needs.

• Class M-25CS recycling five-step capacity control regulates the output in five steps . . . 100%, 75%, 50%, 25% and 0% of capacity. No wasted horsepower, no unnecessary wear on the compressor. Control is simple, extremely sensitive and without delicate adjustments or fragile parts.

Five-step recycling control.





For complete information on the "HA", send for descriptive bulletin. Gardner-Denver Company, Quincy, Illinois.

Other "HA" Features

1. **Unrestricted air passages and large valve and port areas for greater air efficiency.**
2. **Timken main bearings for smooth, economical operations.**
3. **Large water-jacket areas for cooler running . . . lower discharge temperatures and lubricating economy.**
4. **Rugged, heavy-duty construction for long life and continuous service.**
5. **To reduce heat and moisture content of air further, for maximum hose and tool life, an efficient "Clean Air" after-cooler is available as additional equipment.**

GARDNER-DENVER *Since 1859*

Motorola

3-Way Radiotelephone gives you . . .

Illustration Courtesy of Association of American Railroads

Instant Control OF ALL SWITCHING MOVEMENTS

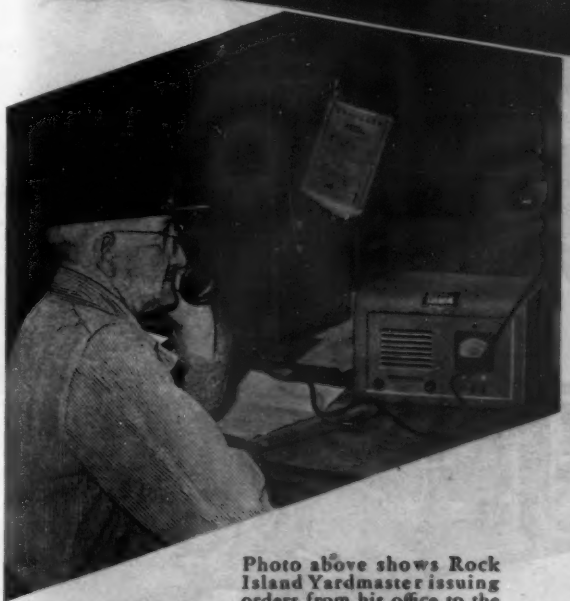


Photo above shows Rock Island Yardmaster issuing orders from his office to the switching crew speeding down the track, 20 miles away.

YOUR yardmaster is in instant touch with switching crews and they with him or each other through Motorola F-M Radiotelephone. This results in the safe, speedy control of switching operations that modern railroading demands.

ANOTHER MOTOROLA RADIO FIRST

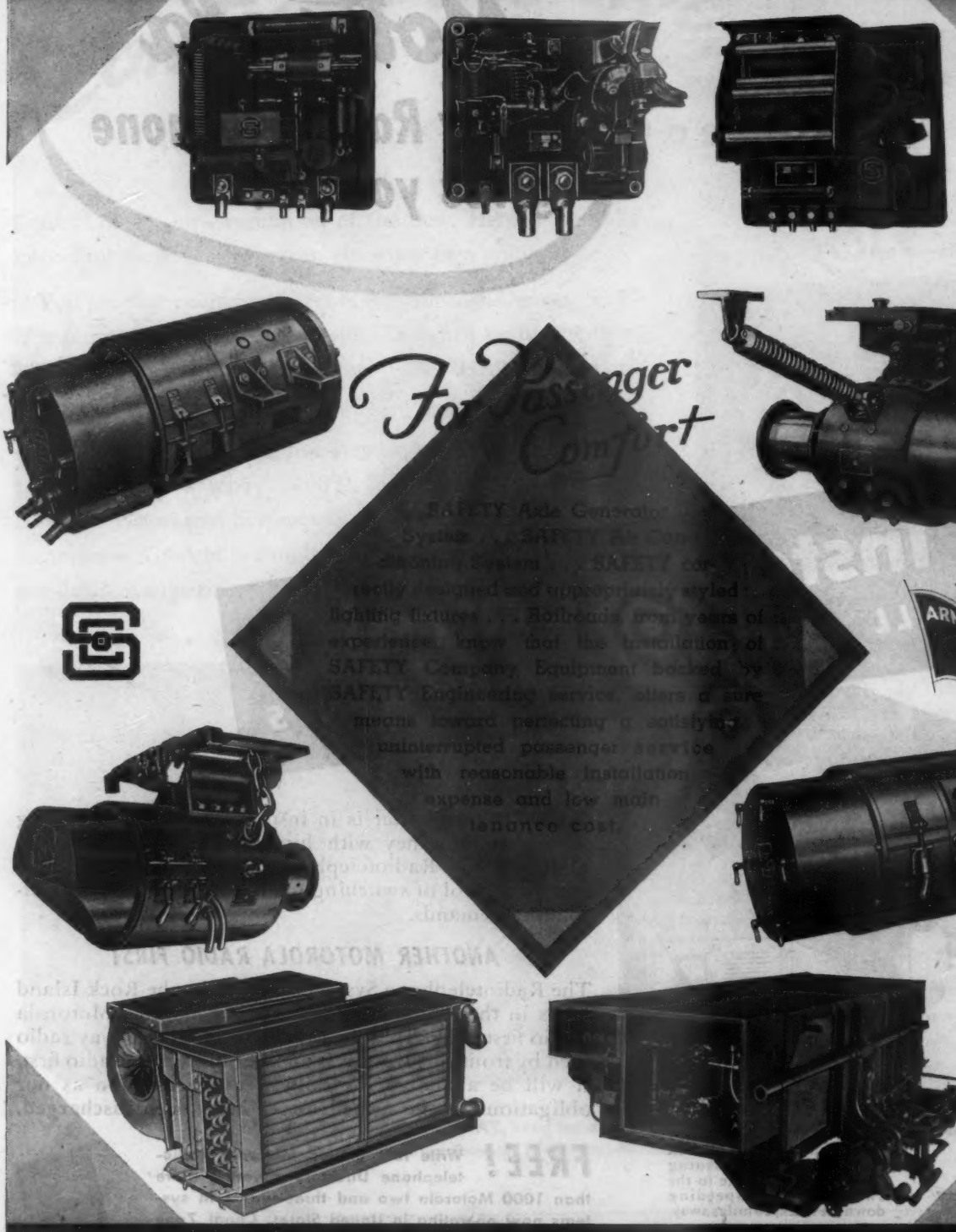
The Radiotelephone System installed by the Rock Island Lines in their Blue Island Yards is a notable Motorola Radio first. The "Handie Talkie," a small two-way radio used by front-line troops, is another Motorola Radio first. It will be available for railway usage as soon as our obligations to the armed forces have been discharged.

FREE! Write for detailed Motorola Radiotelephone Directory covering more than 1000 Motorola two and three-way F-M systems now operating in United States, Canal Zone and Hawaii.

COMMUNICATION AND ELECTRONICS DIVISION

GALVIN MFG. CORPORATION · CHICAGO 51

LIGHTING AND AIR CONDITIONING EQUIPMENT FOR RAILWAY SERVICE

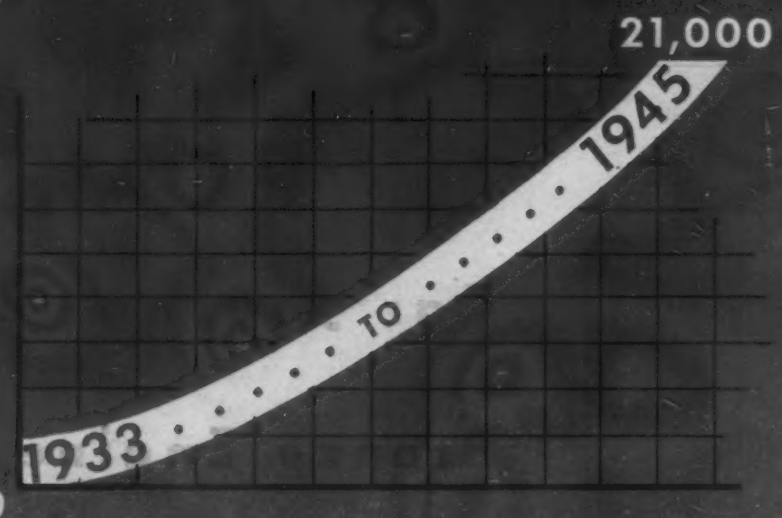


THE SAFETY CAR HEATING AND LIGHTING COMPANY, INC.

NEW YORK • CHICAGO • PHILADELPHIA • BOSTON

ST. LOUIS • SAN FRANCISCO • MONTREAL

Let the RECORD Speak



FOR BOXPOK DRIVING WHEELS

The steadily increasing number of BOXPOK DRIVING WHEEL CENTERS on the railroads of the world is convincing proof of their superior performance. Among their outstanding advantages are the following:

Greater Strength — Less Weight — Insurance Against Out-of-Round Wheels — Increased Tire Mileage — Less Maintenance Expense

GENERAL STEEL CASTINGS

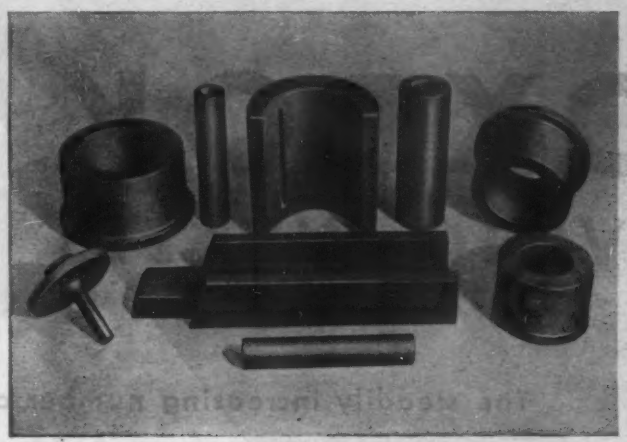
Eddystone, Pa. **Granite City, Ill.**

"PRAIRIE"

Car Journal Bearings

and

Bronze Engine Castings



Specialists in the manufacture of uniform, dependable bronze bearings and engine castings exclusively for the railroad industry.

Full details upon request

PRAIRIE BRASS AND METAL COMPANY

Subsidiary of

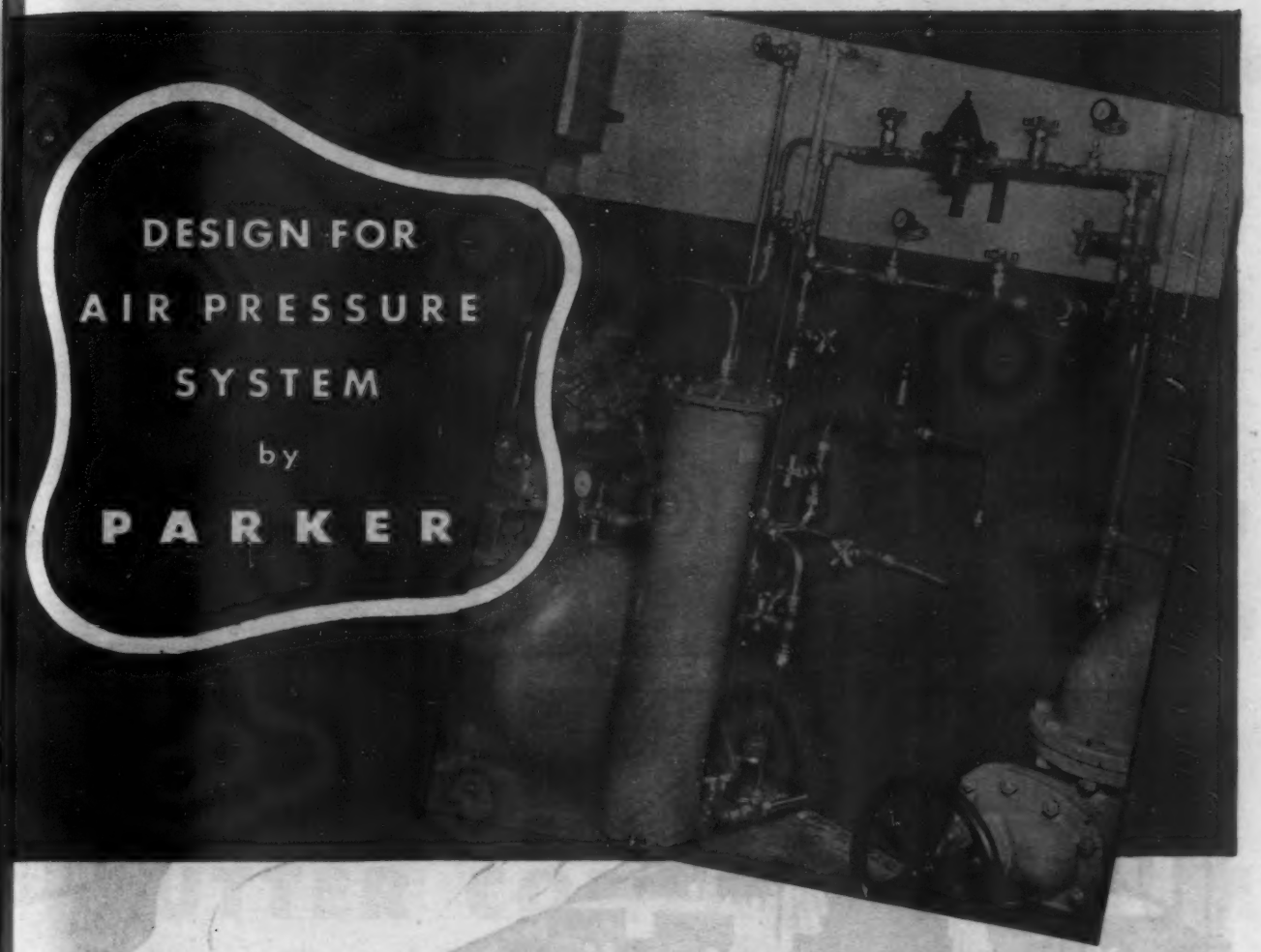
American Smelting and Refining Company

1912 Railway Exchange Bldg.
St. Louis, Mo.

120 Broadway
New York, N. Y.

1711 Cherry St.
Kansas City, Mo.

Research Laboratory: PERTH AMBOY, N. J.



Let's take a frank look at the things that make the controls work—on this air pressure system or on *your* machines.

Here are the specifications for the kind of tubing system that sound Fluid Power Engineering calls for:

Streamlined Flow—for minimum pressure drop, freedom from obstructions and minimum demand on power source.

Space Saving—making best possible use of available space.

Easy Accessibility—for quick and inexpensive service and maintenance.

Fewer Joints and Connections—for greater protection against the possibility of leaks, even under conditions of severe vibration, high pressures and abuse.

Parker Fluid Power engineers, for more than twenty years, have been designing these systems — for aircraft, motor vehicles, machine tools, refrigeration and process equipment.

We've been building the valves and fittings and the fabricated tubing, for Fluid Power installations, and for fluid transmission.

Whatever you make or plan to make, this broad experience is yours to command. Consult with a Parker engineer, especially in the planning stage. For this service, or for more information, write to The Parker Appliance Co., 17325 Euclid Ave., Cleveland 12, Ohio.

PARKER

LIFT YOUR DINER APPOINTMENTS TO A *Higher Plane*

IN KEEPING with the excellent cuisine of America's railroads, Goodform aluminum chairs are specially designed and custom built to your specifications . . . of sparkling aluminum cushioned with foam rubber and finished with fine upholstery. All have this in common . . . smartness of appearance, graceful style, luxurious comfort, easy handling. They provide a lifetime of guest pleasure and management satisfaction.

GF

THE GENERAL FIREPROOFING CO

YOUNGSTOWN 1, OHIO

METAL DESKS—GOODFORM ALUMINUM CHAIRS—METAL FILING CABINETS—STEEL SHELVING—FILING SUPPLIES—STORAGE CABINETS

HONEYWELL

SHUTTER CONTROL SYSTEM

After Test On Diesel Electric Switcher!

When positive shutter control on a switch engine is needed most, the crew usually has little time to make manual adjustments. Yet cooling water temperature *must* be held constant if the engine is to operate at peak efficiency. Recognizing these facts, the Great Northern Railway conducted a test installation with the Honeywell Shutter Control System in the Diesel electric switcher shown above. Performance under operating conditions demonstrated clearly the advantages of this automatic Shutter Control System. Engine cooling water is held at the required degree, *continuously*, although requirements on a switcher are more severe because of extreme load variations. With this contribution to top running efficiency, the Honeywell Shutter Control System helps hold operating and maintenance costs at a minimum. Today, this control system is proving its value in additional Great Northern Diesel locomotives and others in all parts of the country. For detailed information write Minneapolis-Honeywell Regulator Co., 435 East Erie Street, Chicago 11, Ill. Branches and distributing offices in all principal cities.

Now! Comco FM Radio for Railroads

"Solid" Communications Up to 20 Miles Proved by Tests

Up to 20 miles . . . and extremely "*solid*," too! That's Comco's amazing communications record *proved* in months of exhaustive tests. Think of it! Comco permits instant two-way communications train-to-tower, train-to-train, and engine-to-caboose . . . while the *train rolls along!*

Up-to-the-minute reports transmitted . . . last minute instructions received . . . without time-wasting stops. Easy communications between yard master and train crews. Less rolling stock needed. Hours saved in running time. Notably *safer,* more dependable service for traveler and shipper. All are now a Comco reality . . . an accomplished *fact!*

Ever striving to excel . . . always taking time to do things better . . . the name Comco, already great in the realm of electronics, is now destined to be equally great on the railroads of America.

WRITE! *Just a note on your company letterhead outlining your exact requirements. We'll give you the benefit of our specialized experience.*

Customized

FOR

DEPENDABLE PERFORMANCE

FM Transmitter and Receiver

A crystal controlled VHF transmitter and receiver for operation on 152-162 Mc. Units available in 15, 25 or 50 watts. An 18-inch antenna provides adequate clearance.

Tropicalized components and extra rugged *Customized* construction mean long, trouble-free operation.

Ease of installation and maintenance are also outstanding features. Original installation can be made in 30 minutes. Defective units can be replaced in 5 minutes. All with non-technical personnel.

MANUFACTURERS OF RADIO COMCO & ELECTRONIC EQUIPMENT

COMMUNICATIONS COMPANY, Inc.

CORAL GABLES 34, FLORIDA

Bendix

VERY HIGH FREQUENCY

TRAIN COMMUNICATION SYSTEMS

Provide reliable two-way communication between engine and caboose of a freight train. Such communication facilities permit the engineer to

- *KNOW* the condition of the train by reports from the conductor,
- *KNOW* whether the flagman is aboard after the "High Green" shows up on the signal tower, and to
- *ADVISE* the conductor of conditions ahead.

End-to-end communication keeps the crew members informed.

Bendix V.H.F. Train Communication Systems maintain such end-to-end communication regardless of weather conditions, regardless of electrical interference—a clear, two-way, radio-telephone circuit is present at all times.

For further information on the advantages of Bendix V.H.F. Train Communication Systems write to Bendix Radio, first to bring V.H.F. to the Railroads.

BENDIX RADIO

Bendix Radio

DIVISION

BALTIMORE 4, • MARYLAND

Traveling Salesman

BY CARRYING YOUR RAW MATERIALS or finished products with speed and economy, General American tank cars help you competitively—open new markets for you—can be considered part of your selling force.

FOR YOUR FUTURE PRODUCTS—perhaps never carried in bulk before—General American research engineers will design the tank cars that give you safe, sure, economical transportation.

GATX GENERAL AMERICAN

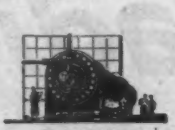
GENERAL AMERICAN TRANSPORTATION

CORPORATION

CHICAGO

Builders and Operators of Specialized Railroad Freight Cars

Bulk Liquid Storage Terminals


Process Equipment of All Kinds

Pressure Vessels and Other Welded Equipment

Aerocoach Motor Coaches

Precooling Service for Fruits and Vegetables

MODERNIZING with LFM

One Piece CYLINDER CASTINGS

LFM one piece casting applied to locomotive bed in the Santa Fe Shops

IN MODERNIZING or rebuilding old power, LFM one piece cylinder saddles besides reducing bolted connections, make a substantial front brace—thus securing the advantages of a box frame construction.

The casting of these one piece steel or iron cylinder saddles to your requirements is but one of the LFM services to railroads. Besides cylinders of all types our shops at Atchison produce other railroads specialties such as disc type driving wheel centers, lightweight pistons, packing and castings of all kinds. Take your requirements to LFM.

LFM alloy steel pistons are 50 per cent lighter than the conventional type. Used with LFM Universal sectional bull and packing rings, they assure big savings.

THE LOCOMOTIVE FINISHED MATERIAL CO.

ATCHISON, KANSAS • NEW YORK CITY • CHICAGO, ILL.

Again,

The above car is one of a lot of 2,000 recently built, equipped with Barber Stabilized Trucks.

The continued use of Barber Stabilized Trucks by so many railroads on their new freight cars can mean only one thing — *Satisfactory Service* under today's faster speeds and heavier loads. These trucks are designed and built to absorb shocks under all load conditions; the friction resistance between friction casting and wear plate IS NOT A FIXED PRESSURE but is at all times in correct proportion to the load.

BARBER STABILIZED TRUCKS Mean Satisfaction Today, Preparedness for Tomorrow.

A spring grouping with 2½" travel can be substituted for A.A.R. Springs if desired.

Selected for over 95,000 cars by 55 different Railroads and Private Car Lines.

STANDARD CAR TRUCK COMPANY
332 SOUTH MICHIGAN AVENUE CHICAGO, ILLINOIS

APEXIOR SURFACING INCREASES OPERATING PROFITS TWO WAYS

1. *Lengthens Life of Boiler Metal*
2. *Shortens Locomotive Shop Time*

Interior of Locomotive Boiler Shell after 3¼ years of operation without cleaning. This shell had been sand blasted and surfaced with APEXIOR NUMBER 1.

That the use or non-use of APEXIOR can make a noticeable difference in your profit sheet may appear to be overemphasis of a maintenance detail. But figure it out for yourself.

A brush-applied protective coating of APEXIOR NUMBER 1, a few thousandths of an inch thick, prevents water or steam from contacting the metal of locomotive boiler shells and other surfaces exposed to boiler water and steam. That's why it effectively retards or checks corrosion and pitting in boilers . . . minimizes the hazards of embrittlement or accelerated stress corrosion. Naturally, that lengthens boiler life . . . postpones indefinitely investment in costly replacement parts.

Moreover, APEXIOR NUMBER 1 retards formation of scale . . . prevents adherent bonding with the metal. Whatever scale does adhere comes off easily. And because an APEXIORIZED surface remains smooth, boiler deposits have little to cling to . . . so, flush away easily . . . Boiler washing is more effective. That means that locomotives spend less time in the shop . . . more time carrying payloads.

APEXIOR NUMBER 1 is applied in thousands of locomotive boilers subject to Interstate Commerce Commission inspection.

APEXIOR NUMBER 3

See how this brush-applied, durable coating protects the water space of locomotive tenders. It air-dries to a chemically inert, shiny-black film, resistant to water, moisture and chemicals used in water-conditioning. It does not affect potability of water. Picture shows interior of tender cistern 21 months after surface at right was coated with APEXIOR NUMBER 3. Corroded surface at left was not coated, for comparative test.

See *Locomotive Cyclopedia*. And write for Bulletin.

APEXIOR — *Keeps new metal new . . . Gives old metal new life* — DAMPNEY

THE DAMPNEY COMPANY OF AMERICA
Hyde Park, Boston 36, Mass.

Please send free Bulletin.

Name.....

Company.....

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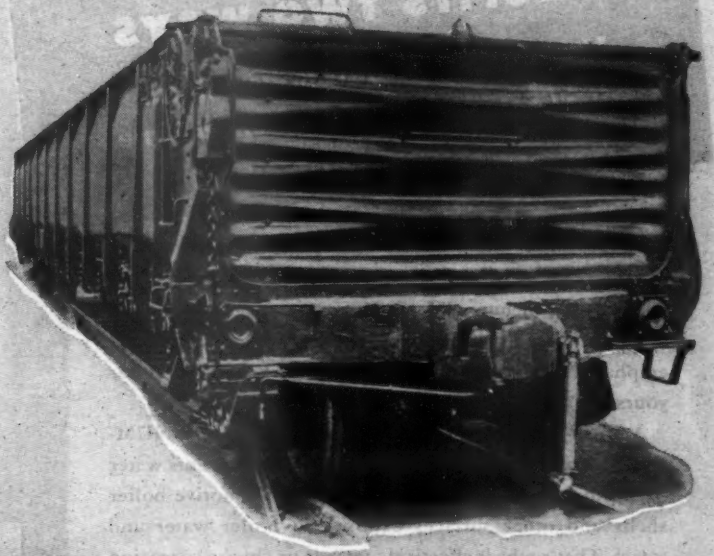
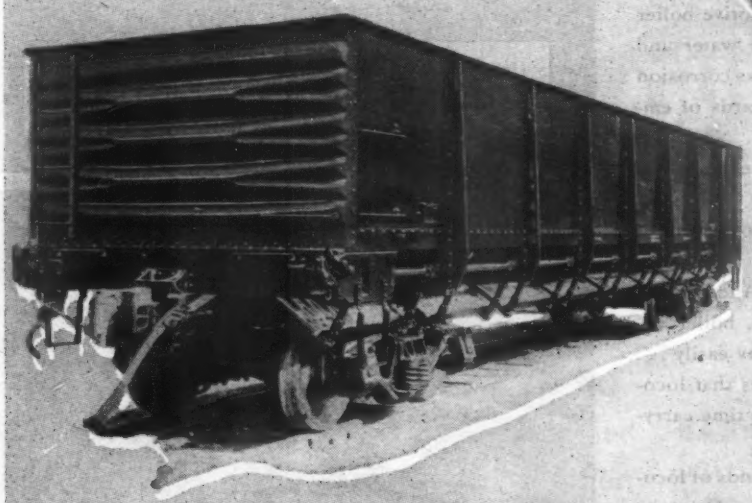
STANDARD

DREADNAUGHT DROP END GATE

HAS NEW BOTTOM REINFORCING FEATURE



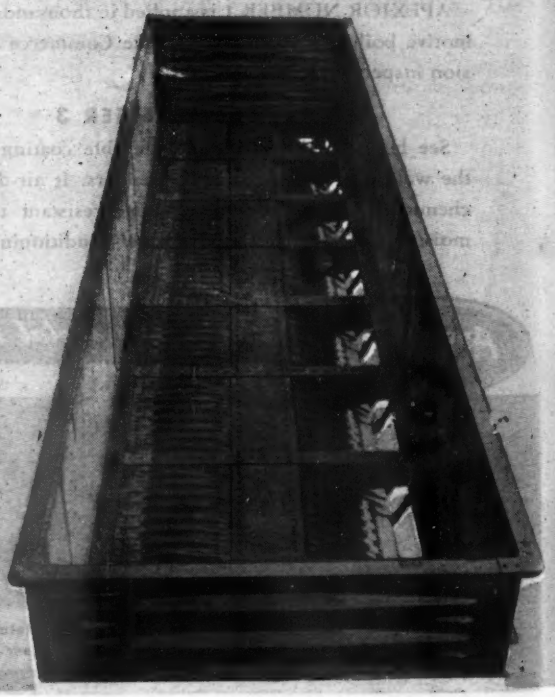


IMPROVED DREADNAUGHT END

WITH ROUND CORNERS AND BOX TYPE CORNER POST

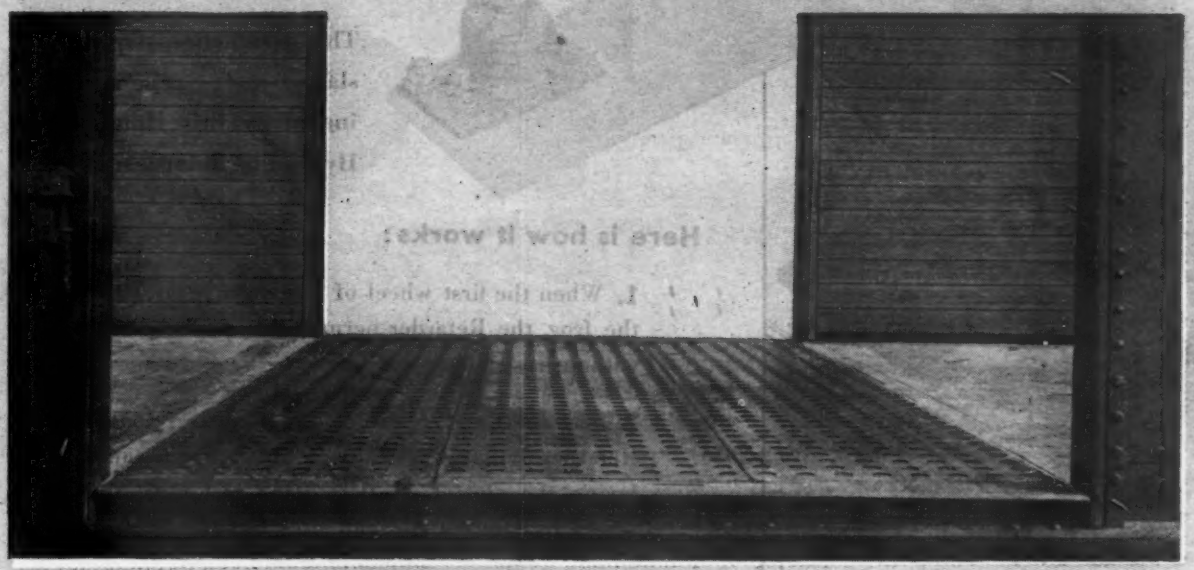
DREADNAUGHT CORRUGATED DOORS

STRONG AND RIGID



DREADNAUGHT PAN DOORS

DESIGNED TO PREVENT LADING LOSS



UNION METAL FLOOR PROTECTORS

DOUBLE THE STRENGTH OF FLOORING AND REDUCE DOORWAY FLOOR MAINTENANCE COSTS

STANDARD RAILWAY EQUIPMENT MFG. COMPANY

HAMMOND, INDIANA

WORKS: HAMMOND, INDIANA — NEW KENSINGTON, PA.

CHICAGO OFFICE—310 S. MICHIGAN AVE.

LIFESAVER
for SPRING FROGS

The destructive slap, slap, slap of spring rails is eliminated by this Houdaille* Hydraulic Retarder.

Here is how it works:

1. When the first wheel of the train presses through the frog, the Retarder permits the spring rail to open without resistance.

2. The instant the wheel pressure is released, the Retarder imposes a steady, controlled resistance, delaying the closing of the spring rail until the last wheel has passed through the frog.

3. The spring rail then closes slowly. All resistance ceases when the rail nears its closed position so that it snaps freely into place.

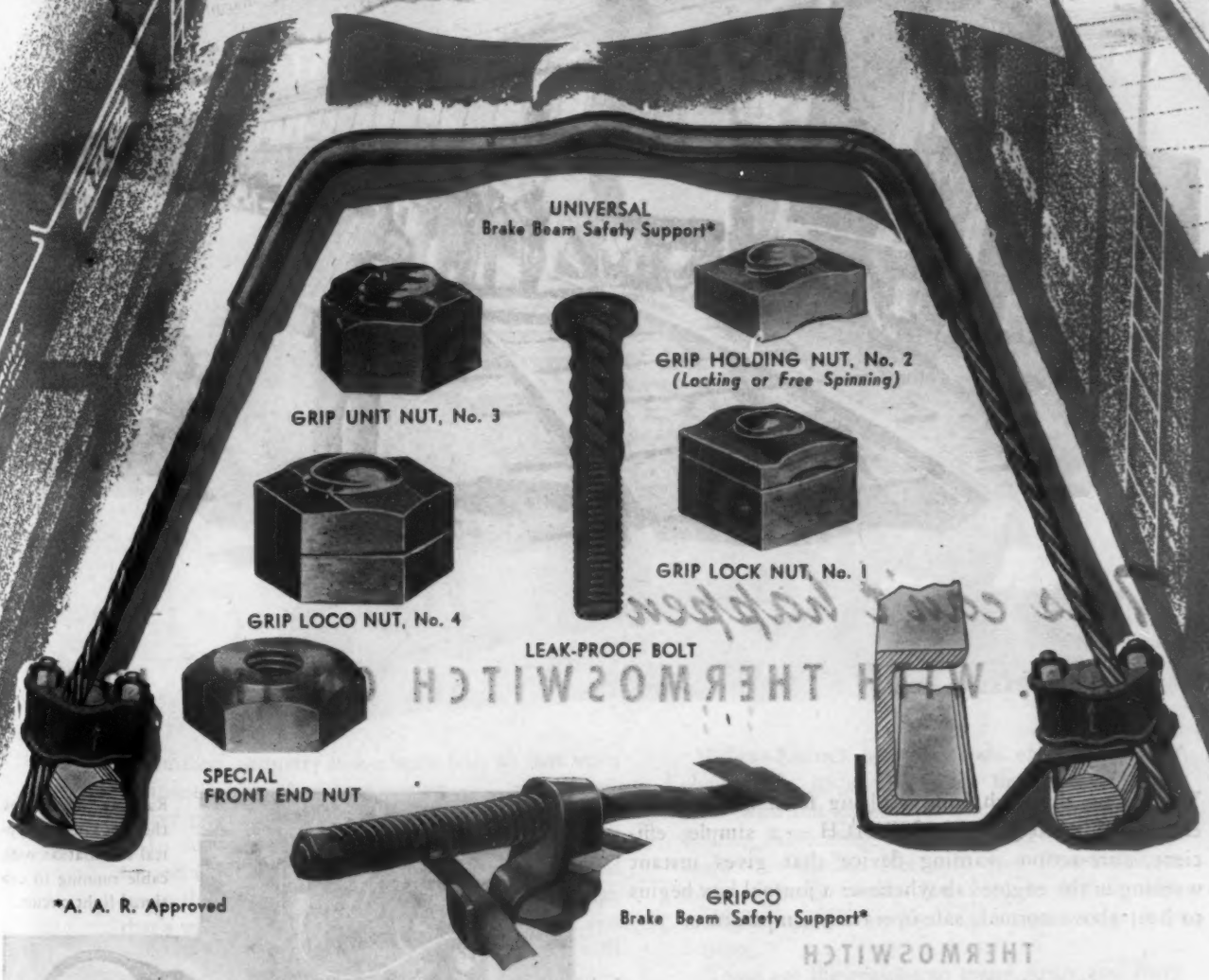
On train, on track, Houdaille Railway hydraulic installations have established an impressive record of performance. We invite the industry to draw upon our engineering experience.

HOUDE ENGINEERING DIVISION OF
HOUDAILLE-HERSHEY CORPORATION
MAKERS OF HYDRAULIC CONTROLS
BUFFALO 11, NEW YORK

*Pronounced—Hoo-dye

PROTECTING VITAL POINTS

on Cars and Locomotives



*A. A. R. Approved

Promote Safety — Reduce Delays — Cut Maintenance Costs!

★ The exceptional ability of Grip Nut Products to guard the vital points on cars and locomotives has been demonstrated anew during the present period of tremendous loads and high speed operation. Grip Nut Products keep equipment in service and off repair tracks.

GRIP NUT COMPANY

310 SOUTH MICHIGAN AVENUE, CHICAGO 4, ILLINOIS

REGIONAL OFFICES: ST. PAUL – MINNEAPOLIS – ST. LOUIS – SAN FRANCISCO – CHICAGO – CLEVELAND – SALT LAKE CITY – SALISBURY, N. C. – PITTSBURGH – NEW YORK

Serving American Railroads Since 1906

"If all the hours lost by American railroads within one year, through delays caused by overheated journal boxes, were to be computed in a lump sum, the total would be staggering," states a prominent maintenance official. "Not alone in man hours — which must be multiplied by the number of the train crew, the passengers travelling on business, and the repair crew — but in subsequent delays caused by late deliveries of needed merchandise, the lost time is a negative element which must be overcome by some measure of prevention of these harmful and costly delays."
Fenwal, Inc.

This can't happen

. . . . WITH THERMOSWITCH ON THE JOB!

Trouble on the high iron resulting from hot-boxes is eliminated with THERMOSWITCH — a simple, efficient, sure-action warning device that gives instant warning in the engine cab whenever a journal box begins to heat above normal, safe-operating temperature.

THERMOSWITCH

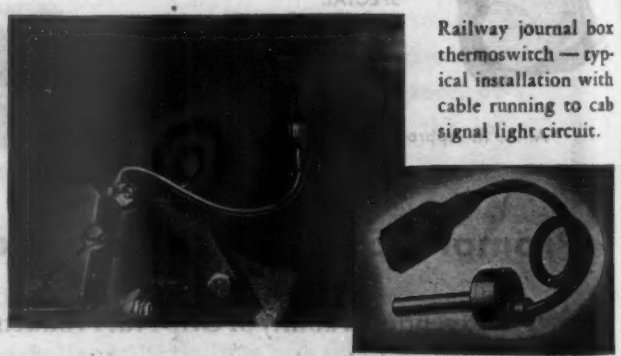
Gives 24-Hours-a-Day Protection

Against Journal-Box Trouble!

Thousands of Thermoswitches in Actual Use
Today on Leading U. S. Railroads' Diesel Engines

This unique, proven alarm is so inexpensive that it adds next to nothing to the cost of new rolling stock, or when applied to units now in service.

Alert to railroading's needs for trustworthy, automatic warning to forestall and prevent costly breakdowns, delays, wrecks caused by hot-boxes. THERMOSWITCH protection is now offered for passenger cars. Fenwal's engineering staff will be glad to discuss THERMOSWITCH and its simple application with you, no obligation, of course. Just address:



Railway journal box thermoswitch — typical installation with cable running to cab signal light circuit.

THERMOSWITCHES

Fenwal, Inc.

FOR COMPLETE TEMPERATURE CONTROL

45 Pleasant Street, Ashland, Massachusetts

Horse sense about Horsepower

Common, ordinary horse sense tells us that worn cylinders mean lost horsepower . . . and horsepower costs money.

To cut down this waste and keep engines up to top efficiency, we need something that will stand up to the beating that cylinder walls get. At least, that's what Hendrik van der Horst figured . . . and several years ago he discovered a cylinder wall surface that multiplies cylinder life 4 to 20 times.

Van der Horst discovered a method of bonding a thick layer of chromium to the cast iron of the cylinder bore and then giving it a "porosity treatment". Everybody knows that chromium resists corrosion and that it is almost as hard as diamonds. But the unusual feature of Van der Horst's PORUS-KROME is the porous nature of its surface.

PORUS-KROME has thousands of tiny pores or channels in its surface . . . so tiny you can't see them with the naked eye. They act as reservoirs, holding lubricating oil and feeding it back to the surface as needed. Not only does PORUS-KROME make cylinder walls last longer, but it also multiplies the life of the conventional rings 3 to 5 times.

These are the reasons so many Army and Navy engines have PORUS-KROME in their cylinders. And it's just good horse sense to plan to have it in your engines, too. Write for booklet telling all about PORUS-KROME.

Van der Horst Corporation of America, Olean, New York. *Plants in Olean, New York and Cleveland, Ohio.*

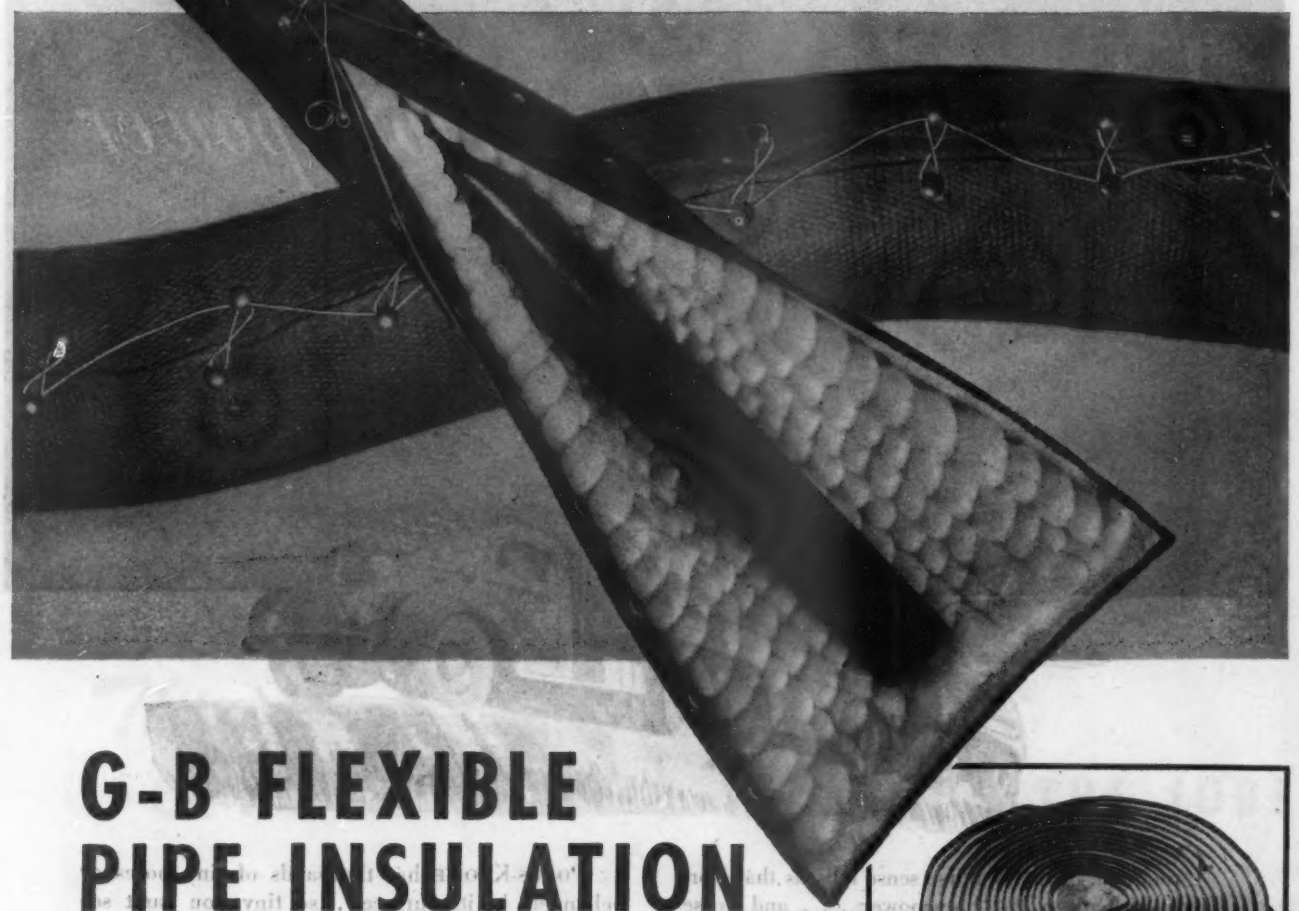
PORUS - KROME

Good for the Life of your Engines

VAN DER HORST

BETTER INSULATION

For Steam Train Lines
WHERE SERVICE IS TOUGH!



G-B FLEXIBLE PIPE INSULATION

Passenger comfort in the last car as well as the first is assured with this more flexible, efficient and resilient insulation for steam train lines. Its unique construction makes G-B Flexible Pipe Insulation easier to apply on straight runs or bends underneath locomotive tenders and passenger cars.

Fuel economy is assured at any steam temperature by the special bonded Fiberglas fibers formed into ropes and bound with glass twine and adhered to a strong, weatherproof asbestos jacket. The flexibility, strength and resilience of this rope construction assure uniform insulation at all points, without possibility of sagging or shakedown.

The moisture-proof sealing flap and overlap of the asbestos jacket is quickly laced with copper wire around the nickle-plated hooks, resulting in an insulation that is extremely resistant to wear, weather and the impact and abrasion of flying ballast.

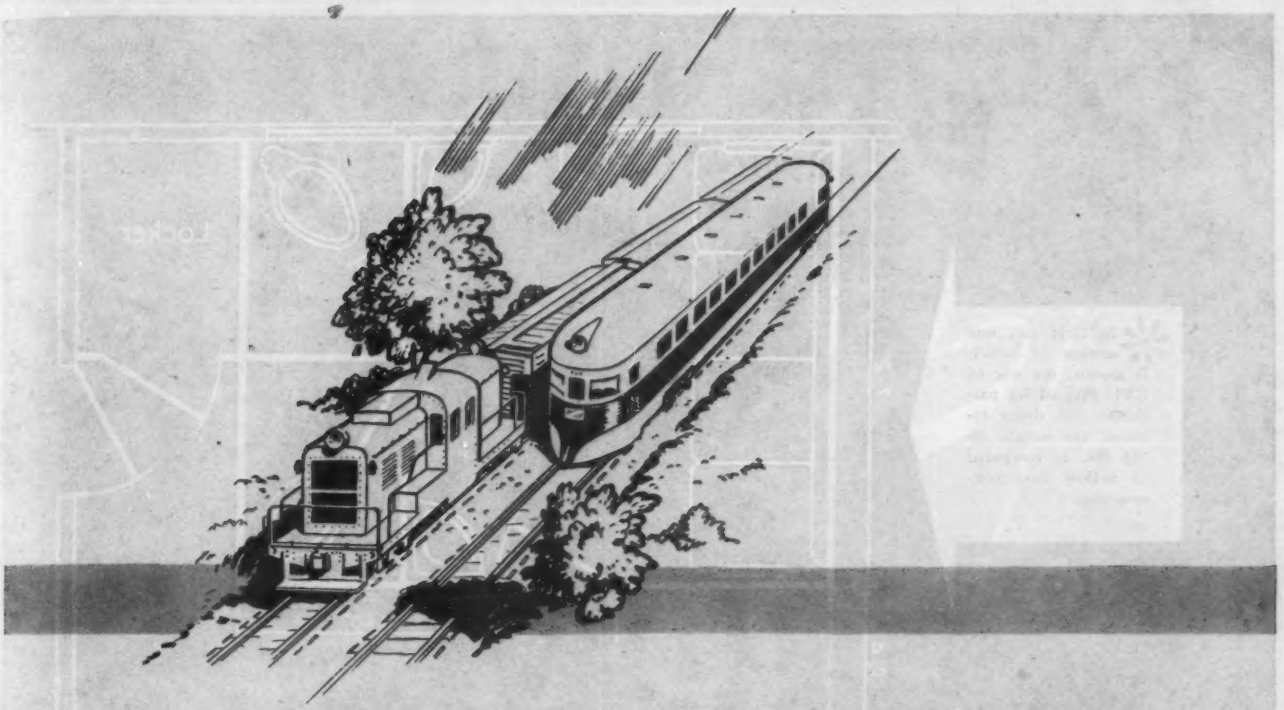
G-B Flexible Pipe Insulation is a companion product to the long-proven, highly efficient Glassbestos Tape and other Gustin-Bacon Railway Insulations made of Fiberglas.

G-B MFG. CO ESTABLISHED 1896

GUSTIN-BACON MFG. COMPANY

KANSAS CITY 7, MISSOURI

NEW YORK • PHILADELPHIA • CHICAGO • TULSA • HOUSTON • FORT WORTH • SAN FRANCISCO

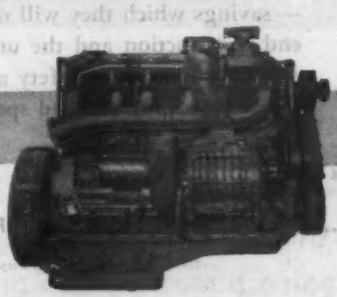


Of this... YOU CAN BE *SURE*

SURPLUS POWER IS PROTECTION . . . protection against the damaging shocks, jerks and strains that add to the abuse and shorten the life of equipment when there is barely "enough power" for *normal* requirements. *Surplus power* is protection, too, against lagging work cycles or accidents because reserve power is always available to handle peak loads or to meet any emergency.

For your industrial locomotives, motor trains, maintenance-of-way equipment or auxiliary installations in main line passenger service, you can be sure of *surplus power* at the minimum cost in space and weight by standardizing on Cummins Dependable Diesels. Three compact, low-weight-per-horsepower models—150, 200 and 275 hp.—have almost the same mounting dimensions and may be used interchangeably in many cases. All three have the same basic design and incorporate a large percentage of the same parts. This assures a simplified service procedure and reduces the parts inventory . . . important points in holding down your costs and increasing your profits.

Have you carefully considered these advantages in specifying Cummins Diesels for your equipment?

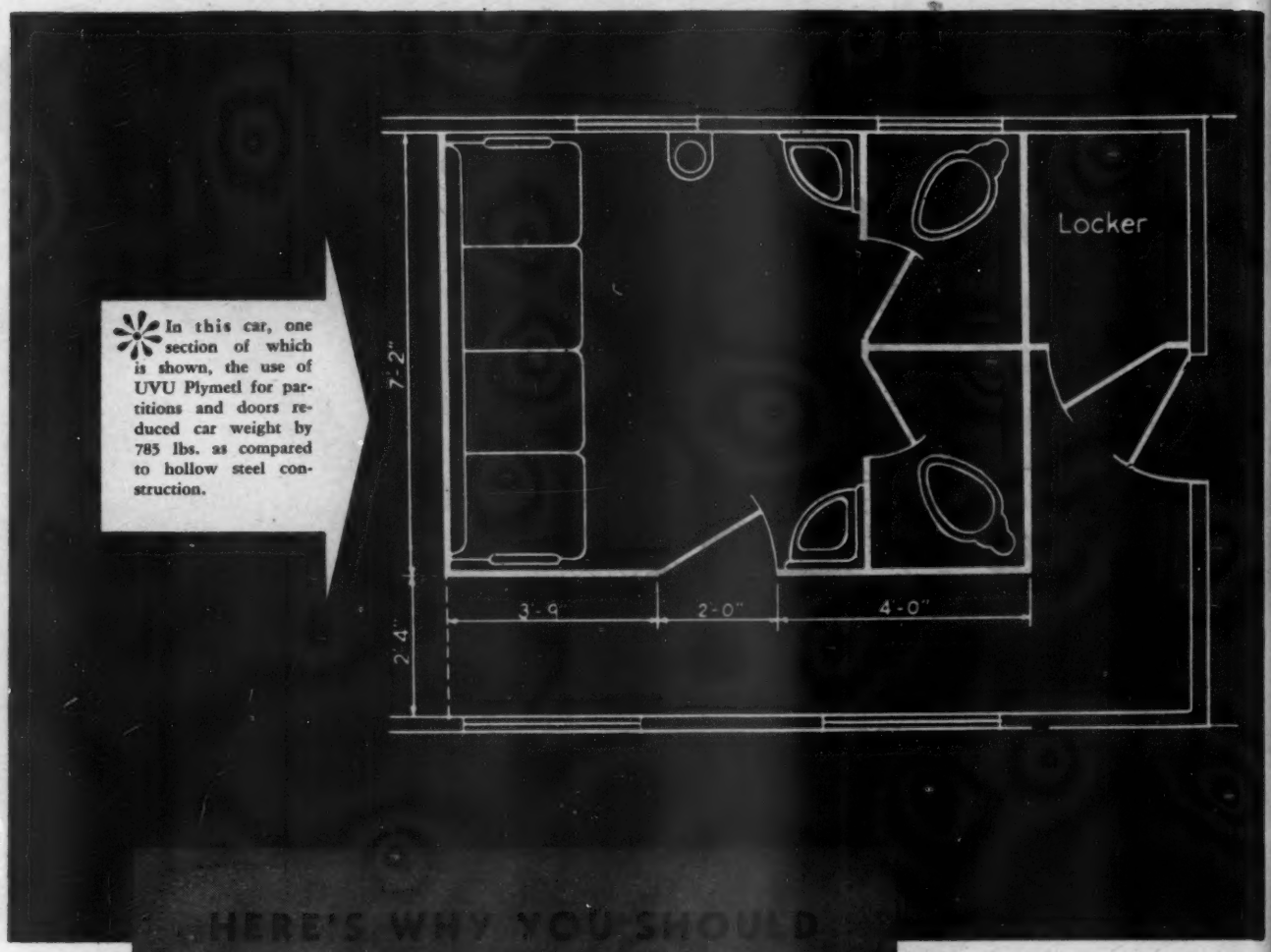


Illustrated is the supercharged, 275 hp. Model NHS Cummins Diesel. In design, dimensions and weight it closely approaches the 150 hp. Model H and the 200 hp. Model NH. All are designed for railroad service. Ask for specifications.

CUMMINS *Dependable* DIESELS

SINCE 1919...PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA


In this car, one section of which is shown, the use of UVU Plymetl for partitions and doors reduced car weight by 785 lbs. as compared to hollow steel construction.
Locker
7'-2"
2'-4"
3'-9"
2'-0"
4'-0"

HERE'S WHY YOU SHOULD

SPECIFY PLYMETL

IN YOUR NEW COACHES

Here are the facts:

The standard ½" UVU Plymetl partition weighs only 1.8 pounds per square foot. A hollow aluminum partition (lighter than the hollow steel) weighs over 2.5 pounds per square foot. Therefore, Plymetl saves over ¾ pounds for every square foot of partition and door. And it is not difficult to figure that the cost of the aluminum alone for the hollow partitions will equal or exceed that of the Plymetl.

By using Plymetl, progressive designers and engineers are making important savings of both money and weight — savings which they will often put into the trucks, the end construction and the underframe so as to build up a greater margin of safety and dependability.

Write today for detailed specifications and samples.

27 YEARS OF RELIABLE PERFORMANCE

HASKELITE MANUFACTURING CORP., DEPT. RR-3, GRAND RAPIDS 2, MICHIGAN

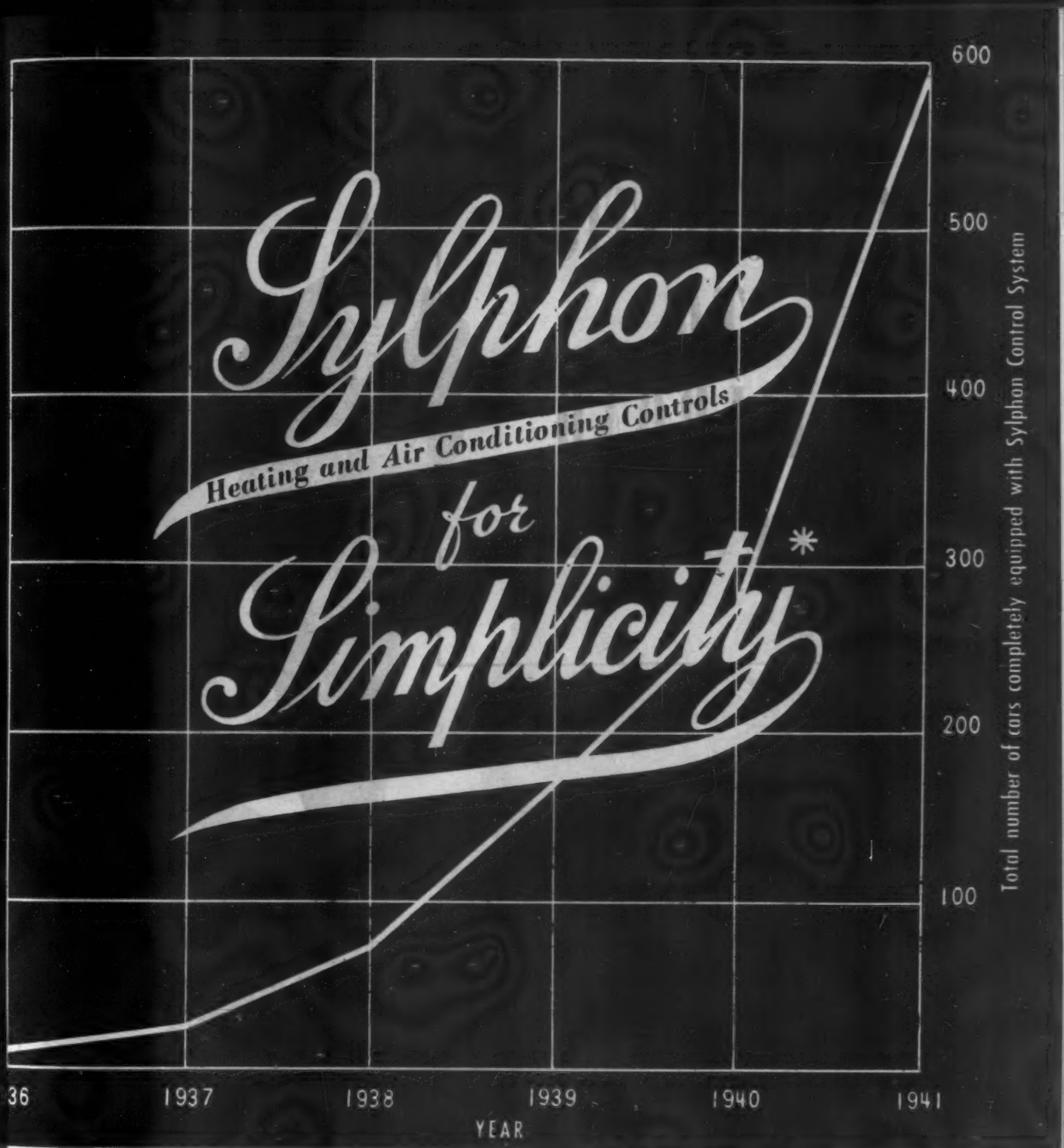
NEW YORK CHICAGO DETROIT ST. LOUIS

IN CANADA—Railway & Power Engineering Corp., Ltd.

HASKELITE

PLYMETL

is lighter, less expensive and saves man hours



Few parts, completely automatic, low maintenance cost.

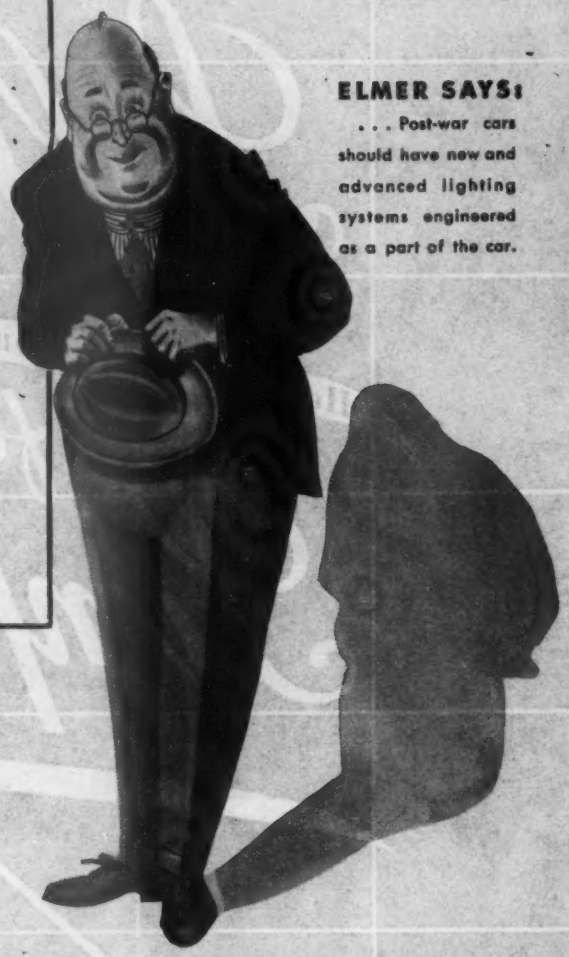
BEFORE you decide your post-war program, investigate the ten year performance record of the Sylphon Control System for heating and air-conditioning . . . installed by some of the largest railroads on more than 600 PASSENGER CARS.

THE FULTON SYLPHON COMPANY

TRANSPORTATION CONTROLS DIVISION

DREXEL BUILDING - PHILADELPHIA 6, PA.

A SUGGESTION TO RAILROAD EXECUTIVES



ELMER SAYS:
. . . Post-war cars should have new and advanced lighting systems engineered as a part of the car.

VISIT the Luminator Lighting Laboratories now . . . you'll see the newest in advanced lighting systems for cars. Luminator specializes in Railroad lighting problems . . . presents the results of this study in full size car interior models. You will witness demonstrations of new methods of interior car lighting.

Cheerful interiors, free of dazzle and glare, plus both fluorescent and incandescent lighting systems designed to blend harmoniously with car interiors will help to build passenger good will.

For the latest developments in the "Science of Seeing" come in and visit the Luminator Lighting Laboratories. Ask your friends who have been here. They'll tell you it's worthwhile.

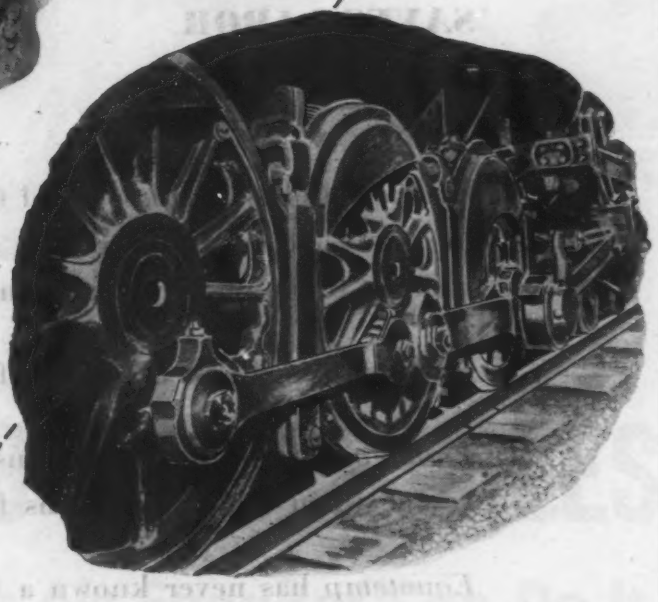
LIGHTING ENGINEERS · DESIGNERS · MANUFACTURERS

LUMINATOR inc.

120 NORTH PEORIA ST., CHICAGO, ILLINOIS
IN CANADA: RAILWAY AND POWER ENGINEERING CORP

A "Mirror" FINISH IN THE SHOP

Prevents Fatigue Failures ON THE ROAD



A smooth, mirror-like machined surface is of utmost importance in avoiding failure of driving-wheel tires in service. For—a dull, non-reflecting surface indicates a rough finish having thousands of incipient fractures, which, when the tire is shrunk on the wheel and subjected to fatigue, may develop into cracks resulting in tire failure.

A "mirror" finish is obtained by machining at higher speeds with Kennametal—the tough, hard, durable cutting tool material that "peels off" the metal, instead of scraping it away. And—because Kennametal retains its edge, the bore is straight and true, which assures secure, uniform fit of tire to wheel.

On most tire machining jobs, Kennametal-tipped tools will take roughing and finishing cuts simultaneously, at greatly increased cutting speeds, and with exceptionally long tool life. Similar advantages can be obtained in the machining of other parts, made of hard steel, tough, stringy alloys, cast iron, or non-ferrous materials.

Catalog 44 describes Kennametal . . . gives helpful information on tool design and application . . . lists prices that are now only about one-tenth of what they were when Kennametal tools were introduced eight years ago. A copy is yours for the asking.

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TRADE MARK REG. U. S. PAT. OFF.

SUPERIOR CEMENTED CARBIDES

KENNAMETAL Inc., LATROBE, PA

EQUATEMP

Quilted Hair Insulation
For Refrigerator Cars

SAVES ICE **SAVES DEAD WEIGHT**

SAVES LABOR **SAVES CLAIMS**

Equatemp **is made of selected Cattle Hair, constructed with the utmost care, to afford the highest degree of insulating value at the lowest practical density.**

Equatemp **is "least expensive for the long run."**

Equatemp **is the time-tested insulation that is called to the rescue when other insulations fail.**

Equatemp **has never known a failure.**

Equatemp **is Refrigerator Car Insulation without a peer.**

CHARLES LACHMAN CO., INC.

PHOENIXVILLE, PA.

Railroad Representative:

George R. Berger

Berger Bldg. **845 So. Wabash Ave.**

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COVERAGE—28 SQUARE MILES!

Only the G-E Super Air Speaker Can Do It

A NEW, powerful voice in industry is now available. It's the G-E Super Air speaker with a range of three miles, for use in far-flung operations where you want action . . . coordinated action . . . immediate action.

It can be used in such widely diversified fields as: railroading, construction projects, surface mining, ranching, harbor control, public utilities, highways, motion picture directing, airports, etc.

Amplified sound is provided through air pressure in such volume that it cuts through surrounding noise, wind, and air resistance with razor-edge sharpness; sound in such volume that clear, intelligible speech can be delivered to a point three miles distant. Instructions can be delivered without miles of communication lines. The Super Air speaker can also be used in locations where conventional and complicated public address systems, much more expensive, would otherwise have to be installed.

Its simplicity and economy will appeal to those whose operations cover vast areas. Four basic elements, horn and driver unit, air compressor, power supply, audio amplifier—all built for hard usage — provide a completely portable system. The required audio input of less than 25 watts is all that is needed to step up the sound level to its peak output—and the three-mile range.

The Super Air speaker is rugged right down to the voice element, which will not fracture, even if subjected to terrific shocks and vibration.

Write for complete information to: *Electronics Department, Specialty Division, General Electric, Syracuse, N.Y.*

See your G-E distributor for Universal Radio Parts, P. A. Systems, Crystals, Receiving, Industrial and Transmitting Tubes, Laboratory and Service Test Equipment.

GENERAL ELECTRIC

166-D1

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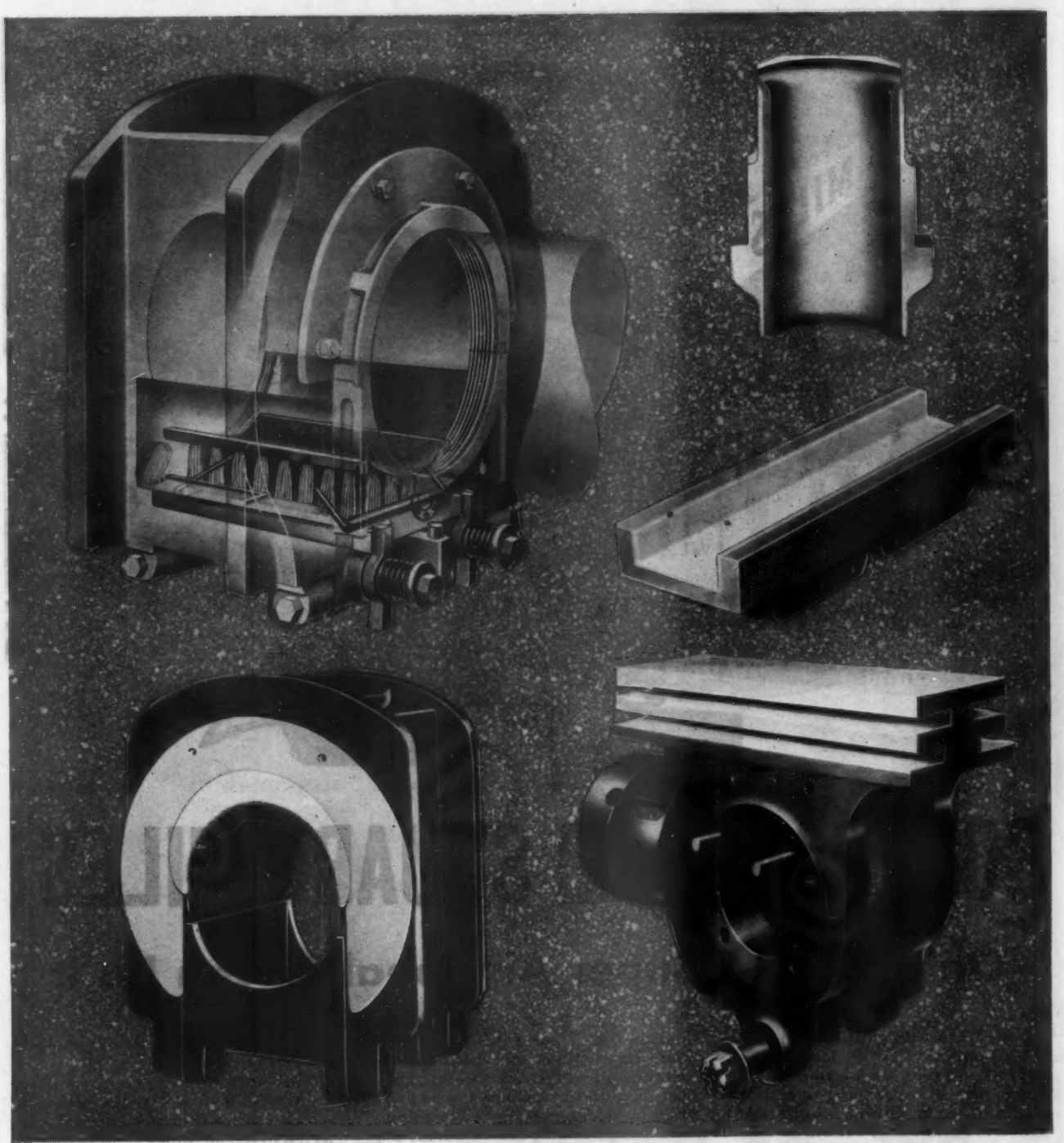
Electronics Department
General Electric
Syracuse, New York

We are interested in further information concerning the G-E Super Air speaker for ☐ Our own use ☐ Resale Distribution

Name.....

Company.....

Address.....



FOR COOL RUNNING JOURNALS...

MAGNUS ***Bearings and Lubricators*** **— SATCO** ***Bearing Metal***

Outstanding performance for over 50 years has resulted in the use of Magnus Products on a large proportion of American Cars and Locomotives.

MAGNUS METAL CORPORATION
CHICAGO NEW YORK

Which will you have?

THIS .. OR THIS

CAR WITH UNTREATED DECKING IN FOR REPAIRS AFTER 5 YEARS

CAR WITH PRESSURE-TREATED SIDING AND DECKING IN FOR REPAIRS AFTER 14 YEARS

A lot of railroad men today are asking themselves whether they can *afford* to continue the use of untreated decks. The pictures shown above tell why.

The car at left, with untreated decking, is in bad condition after only 5 years' service. The car at right, with pressure-treated decking, is in better condition after *14 years'* service. The treated siding has been damaged, but there is remarkably little breakage and no decay.

Based on typical costs as reported by a user, the yearly charge for the treated deck was less than half that of the untreated deck. Or, to figure it another way, the treated deck paid for itself in less than two years of additional service . . . and for the next seven years the installation returned a "profit" of over $20.00 annually.

We advocate the treatment of car lumber, and will be glad to quote on your requirements.

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PITTSBURGH 19, PA.

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Buy War Bonds —and Keep Them!

THE INDUSTRY THAT SERVES ALL INDUSTRY

It's NEW-It's BETTER

MILLERPAX

journal box packing waste

The new, better, Millerpax is designed to eliminate waste grabs, waste wipes and rolling of the packing in high-speed train service. Several years of research contributed the qualities that make Millerpax superior to ordinary packing.

Production of Millerpax is actually three processes in one —

First, all grit, metal, wood, paper, etc., are thoroughly removed from the threads

Then, the threads are subjected to an air-wash which effectively eliminates short ends and lint.

Finally, the threads are interwoven to produce an almost endless mass as is shown in the illustration at the right.

Millerpax is especially advantageous for use in passenger car, freight car and locomotive journal boxes. It is available in either all wool, all cotton, or any combination of the two packings. The thoroughness and care used in producing Millerpax has achieved outstanding results for it on one of the large railroads that has been using Millerpax for more than a year.

If your railroad wants journal box packing that will contribute to better railroad operation, specify MILLERPAX!

MILLERPAX -- Registration applied for Manufacturing Process--Patent Pending

MILLER WASTE MILLS, INC.

WINONA, MINNESOTA

NASH-FINCH CO., Minneapolis - Exclusive Railroad Sales Representative

CAR AXLES

CAR, LOCOMOTIVE TENDER,

AND LOCOMOTIVE AXLES

Furnished to all specifications

DROP FORGED

JOURNAL WEDGES CENTER PLATES

Other Car Forgings

STANDARD FORGINGS CORP.

Plant: INDIANA HARBOR STATION, EAST CHICAGO, INDIANA

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Eliminates drilling and tapping studs—

NELSON ARC STUD WELDING!

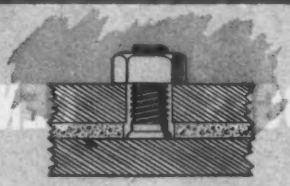
Automatic stud welding saves time and material. It eliminates the costly operations of drilling, tapping, and hand welding bolts for studs. With the Nelson Stud Welder "flux-filled" studs are *automatically* end-welded to metal instantly. Uniform welds with full-fillet result every time.

All standard stud diameters from 3/16" to 3/4" are manufactured—all may be welded with the same stud welding unit. A standard welding generator is used. The equipment is portable and may be used effectively in any position or operated as a production unit from a fixed jig. (Multi-gun units are available for special production jobs.) More than 700 industrial plants and shipyards are using thousands of stud welders in time-saving applications. No previous welding experience is necessary for operators.

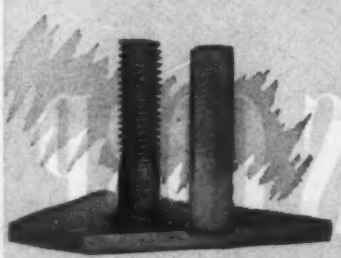
The Nelson Stud Welder welding through locating template.

STUD WELDED IN ½ SECOND!

Eliminates hand welding to secure bolt or stud. Unsightly bolt head is omitted.



Instead stud is welded to metal—equal in strength yet saves three or more operations!



Cutaway view of stud weld after etching with Nital.

Complete fusion of stud to metal is obtained—a deep penetration. Fillet not only on outer surface of stud but complete binding through base. Automatic timing control and uniform heat produces these results—consistently and quickly.

For complete details, prices and catalog write:

NELSON SPECIALTY WELDING EQUIPMENT CORP.

Dept. RA, 440 Peralta Avenue
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Eastern Representative: Camden Stud Welding Corp. Dept. 122, 1416 South Sixth Street, Camden, N. J.

Positive Temperature Control for Diesel Locomotives

Kysor

RADIATOR SHUTTERS

M-366 Kysor Shutter — 87¾" high — 65⅛" wide

BETTER *Engine Performance*

LESS FUEL *Consumption*

Kysor Automatic Air Operated Shutters provide proper water temperature control in the operation of Diesel switching and road engines resulting in the saving of millions of gallons of fuel annually

This outstanding performance of Kysor Radiator Shutters is brought about by the following refinements:

- **√ Long-time service under exacting operating conditions is assured by strong, well-built design.**
- **√ Each installation given individual attention.**
- **√ Thorough engineering affords positive action with a close range of operating temperature.**
- **√ Such close range held at the highest practical point reduces cylinder wall wear and forestalls possible engine failure resulting from rapid and excessive temperature changes.**
- **√ Available in either automatic or manual control, or a combination of both.**

For best results use KYSOR RADIATOR SHUTTERS

Hot Water Heaters by KYSOR

The rugged construction, deep core design and a 12 or 75 volt G.E. motor gives Kysor Hot Water Heaters the ability to provide abundant heat for any type of Diesel locomotive cab. Certain Heater models have built-in power defrosters

KYSOR HEATER CO.

Cadillac Michigan

EXHAUST MANIFOLD AND *SILENCER* IN ONE UNIT

MAXIM exhaust manifold silencers provide an extremely practical space saving advantage because they replace the conventional exhaust manifold and at the same time act as effective silencers of Diesel exhaust noise.

Maxim Silencers make it possible for switching and main line locomotives to use powerful Diesels quietly, a major consideration when yards and right of way are located within city limits and close to business or residential sections.

The conventional Maxim Silencers are also in wide use, often with the spark arrestor feature where operation is in a fire hazard area, such as in the case of refineries or ordnance plants.

Maxim also makes Heat Recovery Silencers, combining effective silencing and spark arresting, where necessary, with the production of hot water or steam for heating. Bulletin WH-101 describing Heat Recovery Silencers will be sent on request.

ARMY E NAVY

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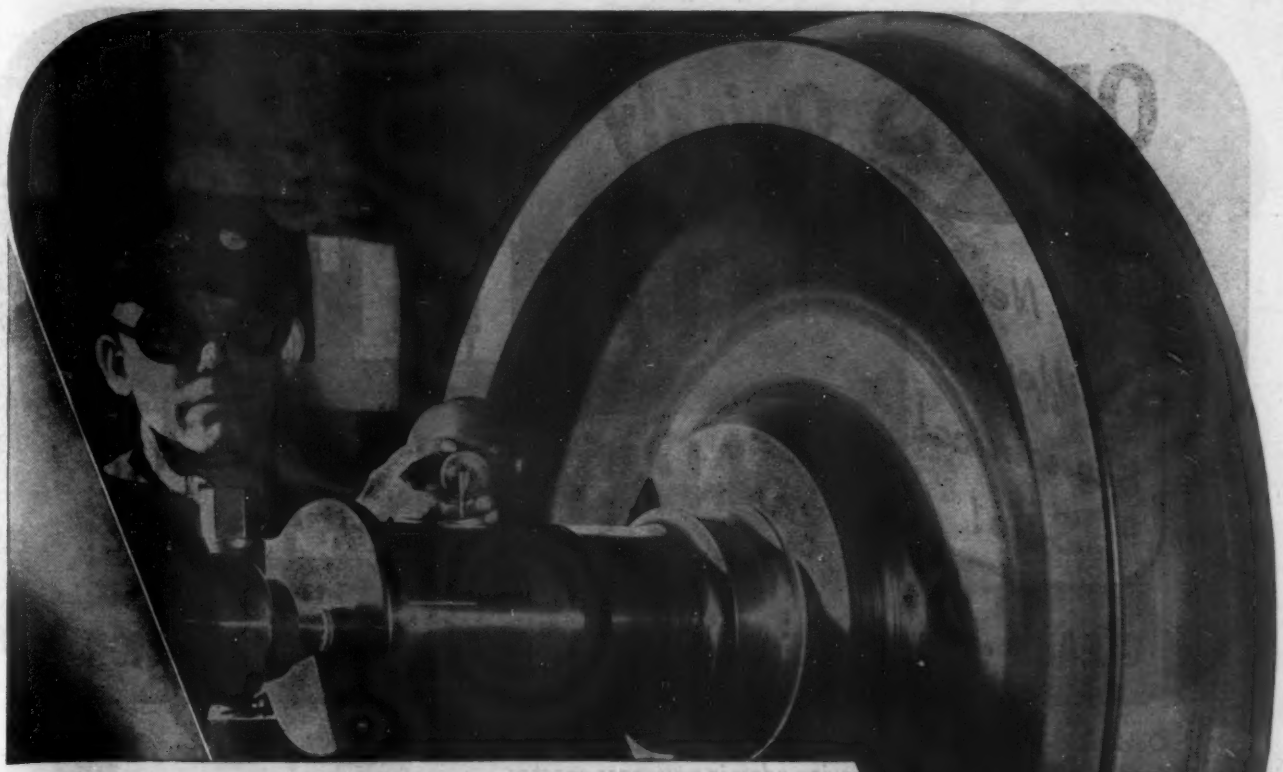
THE MAXIM SILENCER CO. • 64 HOMESTEAD AVE., HARTFORD, CONN.



KEEP YOUR JOURNALS UNDER THE CARS .. *Not On Your Lathes*

In these days of over-age and over-loaded cars, journal protection has become a science.

We are thoroughly familiar with it. During seventy-one years of metallurgical and engineering progress—hand in hand with leading railroads—we have amassed a wealth of experience in perfecting bearings that help prevent scoring and excessive wear on journals.

Give your journals longer life—reduce their reconditioning trips to your lathes—with dependable, easy-running

N·B·M JOURNAL BEARINGS AND ENGINE CASTINGS

NBM

NATIONAL BEARING DIVISION

ST. LOUIS • NEW YORK

AMERICAN Brake Shoe COMPANY

PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

ODORS Quickly Destroyed with

It's New! Different Economical Safe!

OAKITE TRI-SAN

CLEANS • DEODORIZES • DISINFECTS . . . IN ONE OPERATION

Oakite TRI-SAN provides a LOW-COST answer to every railroad's problem of quickly destroying odors in passenger coaches, smoking cars, troop and hospital trains . . . and CLEANING and DISINFECTING surfaces at the same time in ONE single operation.

Did we say LOW-COST? Yes . . . an ounce of Oakite TRI-SAN to a gallon of water makes a solution costing only one cent! Merely apply solution to surfaces with mop, brush or cloth. Oakite TRI-SAN has NO odor . . . leaves NONE. Comes in powder form, contains no poisonous or corrosive ingredients, is SAFE to use and handle. Write today . . . arrange for a demonstration on your road.

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Stale smoke odors minimized in smokers.

Oakite TRI-SAN destroys odors in troop trains.

YOU CAN SAVE TIME & MONEY

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This Baffle Construction is WEATHERPROOF

It Keeps Out

RAIN
SNOW
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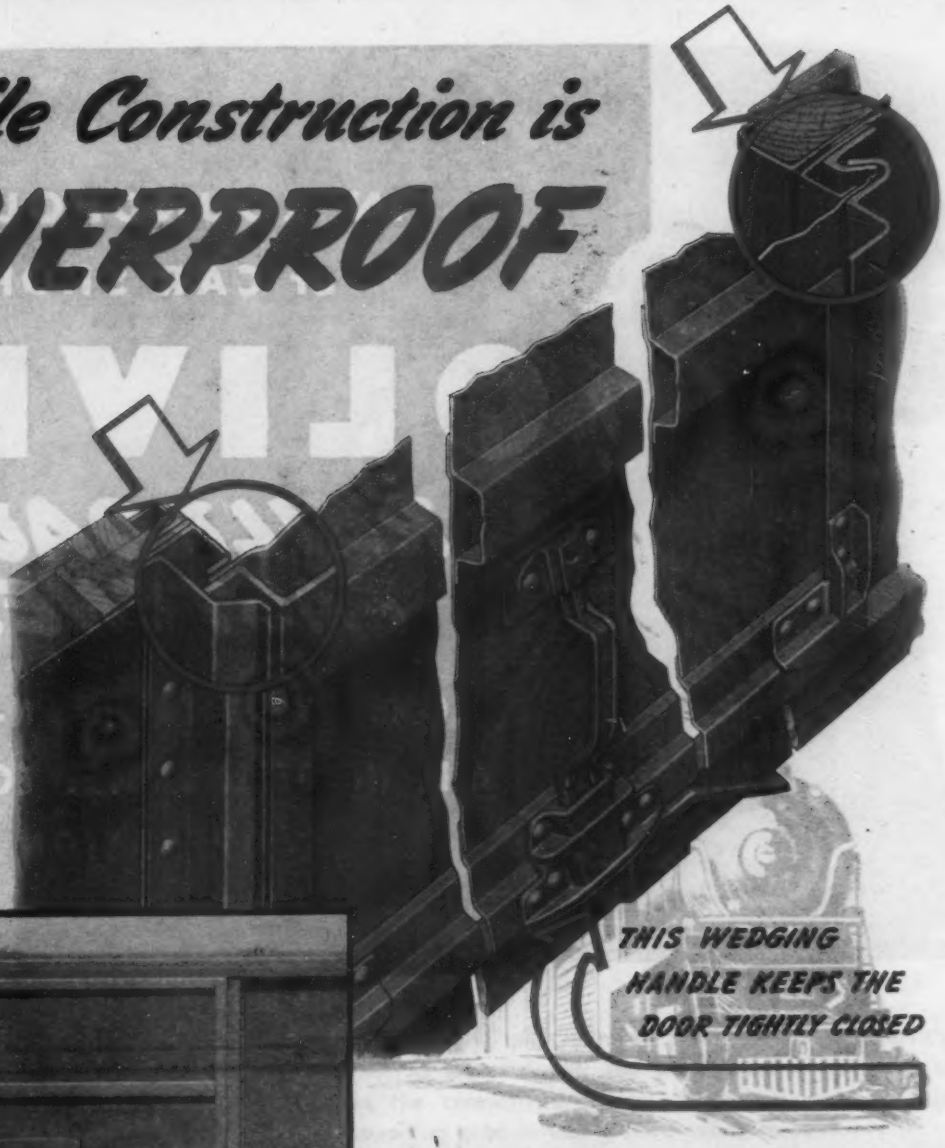
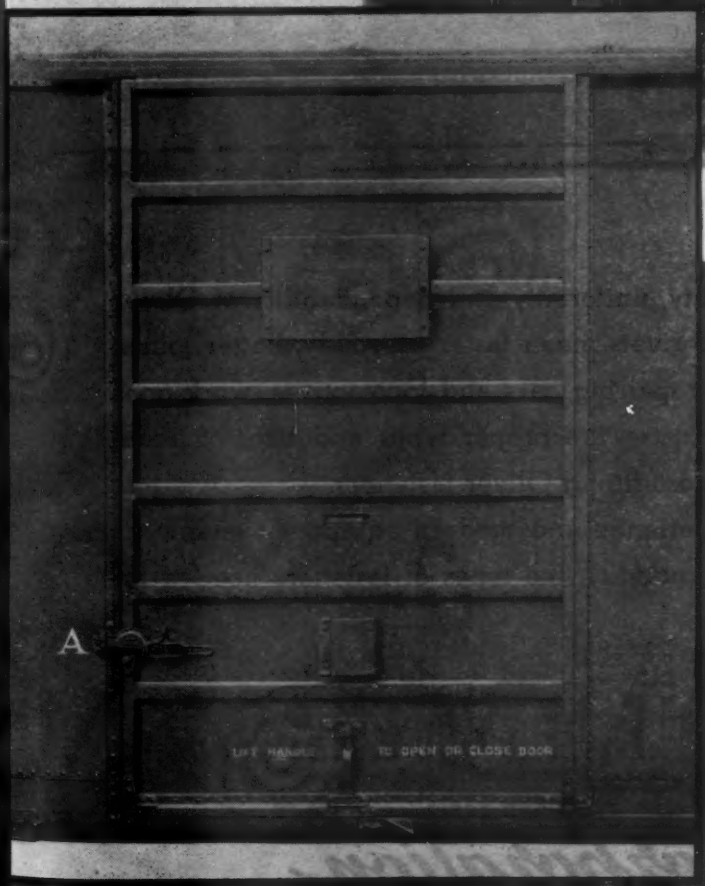
...reduces damage claims





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CAR DOORS

- RIGID CONSTRUCTION
- LIGHT WEIGHT
- LONG LIFE
- WEATHER PROOF
- FREE ROLLING
- NO SLAMMING

SUPERIOR CAR DOOR COMPANY

McCORMICK BUILDING · CHICAGO

IN ROUNDHOUSE
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OLIVER

RAILROAD FASTENERS

CONSERVE VITAL MAN-HOURS..
AID IN DEPENDABLE, ECONOMICAL
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The high quality, uniformity and dependability of Oliver bolts, nuts and rivets mean faster assembly, better joints. In building or repairing cars and locomotives, work goes faster when you use the proper types and sizes of accurately made, close-fitting Oliver fasteners.

Years of experience and modern equipment enable us to produce, in quantity, the types of fasteners needed for railroad service.

Write for the Oliver Railroad Catalog No. 4. Lists bolts, nuts, rivets, gage rods and other accessories.

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SOUTH TENTH & MURIEL STREETS · PITTSBURGH 3, PA.

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1887 — 1945

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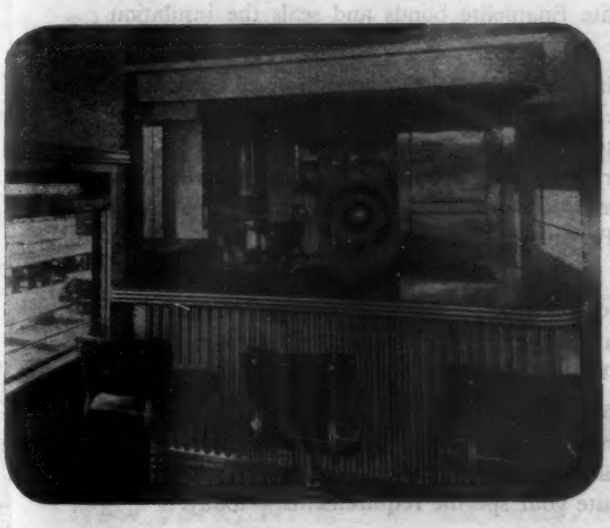

OFFERING your railroad's patrons the best of service, is essential now and will become increasingly so in the competitive future. Factor Number One in supplying good service is good rolling stock.

Up-to-date machinery, field engineering, experienced mechanics, and a forward-looking managerial staff makes it possible for us to provide your railroad with the topmost in design and construction of railroad cars and car equipment.

To offer good service always — consult
ST. LOUIS CAR COMPANY
for your next cars and equipment because quality is an integral part of all products we build.

The Range of Production Now Available at Our 60-Acre Car Plant

- Passenger Cars
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St. Louis Car Company

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PRESSTITE SEALING COMPOUNDS PROVIDE BETTER SEALING

For a Wide Variety of Uses

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Integral Fuel Tanks
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For the Refrigeration Industry:
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For the Railroads:
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For the Building Industry:
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For the Automotive Industry:
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Miscellaneous:
For Glazing Greenhouse Windows
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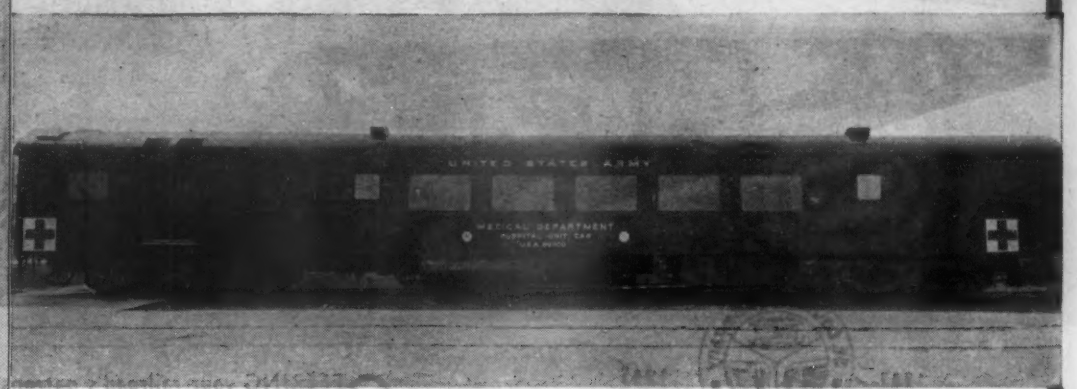
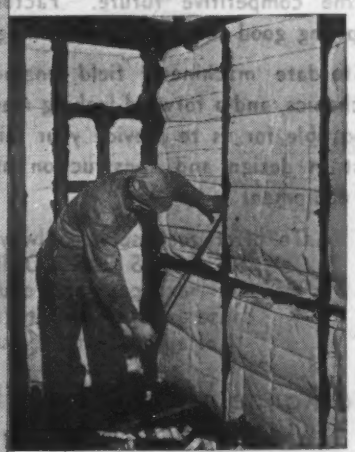
Ammunition Paints
Plus Many Special Products for the Army and Navy

Our Engineering, Technical, and Laboratory facilities are at the service of any industry with a sealing problem.

Widely known for their use in many fields, Presstite Sealing Compounds are finding many applications in railroad car construction. For example, in the Army's newest type hospital cars built at the St. Charles, Missouri, plant of American Car & Foundry Company, Presstite No. 500 Adhesive Felt Tape is used as an insulation against frost and as an anti-squeak and sound deadener. Presstite Permagum tightly seals and seats such equipment as toilet bowls, and Presstite Enamelite bonds and seals the insulation of the refrigeration and cooling systems.



ACF-Built Hospital Car for Army Transportation Corps.



Presstite No. 500 Adhesive Felt Tape being applied as anti-squeak and sound deadener

Other Presstite sealers and adhesives that assure better sealing, more economical car construction and maintenance, include: No. 23212 Extruded Glass Sealer, No. 2390 Asphalt Rustproofing Mastic, Nos. 504 and 505 Impregnated Adhesive Felt Packing and Presstico Spot Weld Sealer.

To all industry, Presstite offers superior sealing compounds that have met the stringent testing of wartime applications, as well as a long record of industrial uses for over a quarter century.

Whatever your particular problems in the field of sealers or adhesives, we welcome the opportunity of working with you and your engineers. Just send Presstite your specific requirements — today.

PRESSTITE SEALING COMPOUNDS

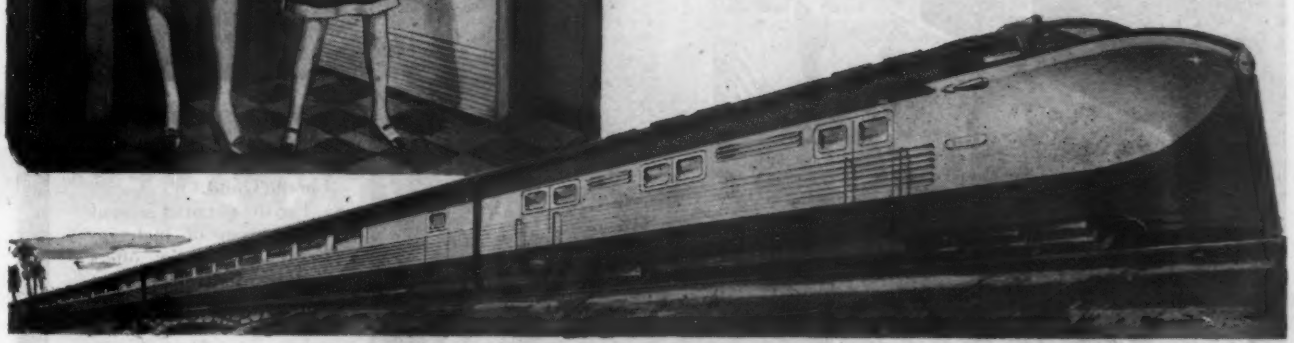
PRESSTITE ENGINEERING COMPANY
3954 Chouteau Avenue • St. Louis 10, Missouri

EFFORTLESS

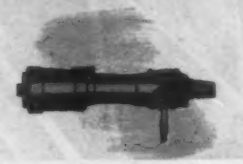
AUTOMATIC

END DOOR OPERATORS

Add New Conveniences for Rail Travelers



MAKING rail travel a pleasure is the number one job for railroads with an eye on competition. Travelers on modern trains like to move about freely to enjoy all the luxuries especially designed for their use. ☆ On many famous trains passengers are discovering that heavy end doors now operate automatically. Doors equipped with N. P. operators open and close easily and safely with hardly more than a light touch. Even children can open N. P. equipped doors without effort. ☆ Many safety features are built into these automatic N. P. operators and, of course, the action is correctly timed to eliminate unnecessary loss of conditioned air. ☆ Learn all the details. Phone or write us today.



THIS ONE UNIT DOES 3 IMPORTANT JOBS

The N. P. operator is a combination door opener, door closer and door check built into a single unit. It is powered by the same dependable air system that operates the brakes.

NATIONAL PNEUMATIC COMPANY

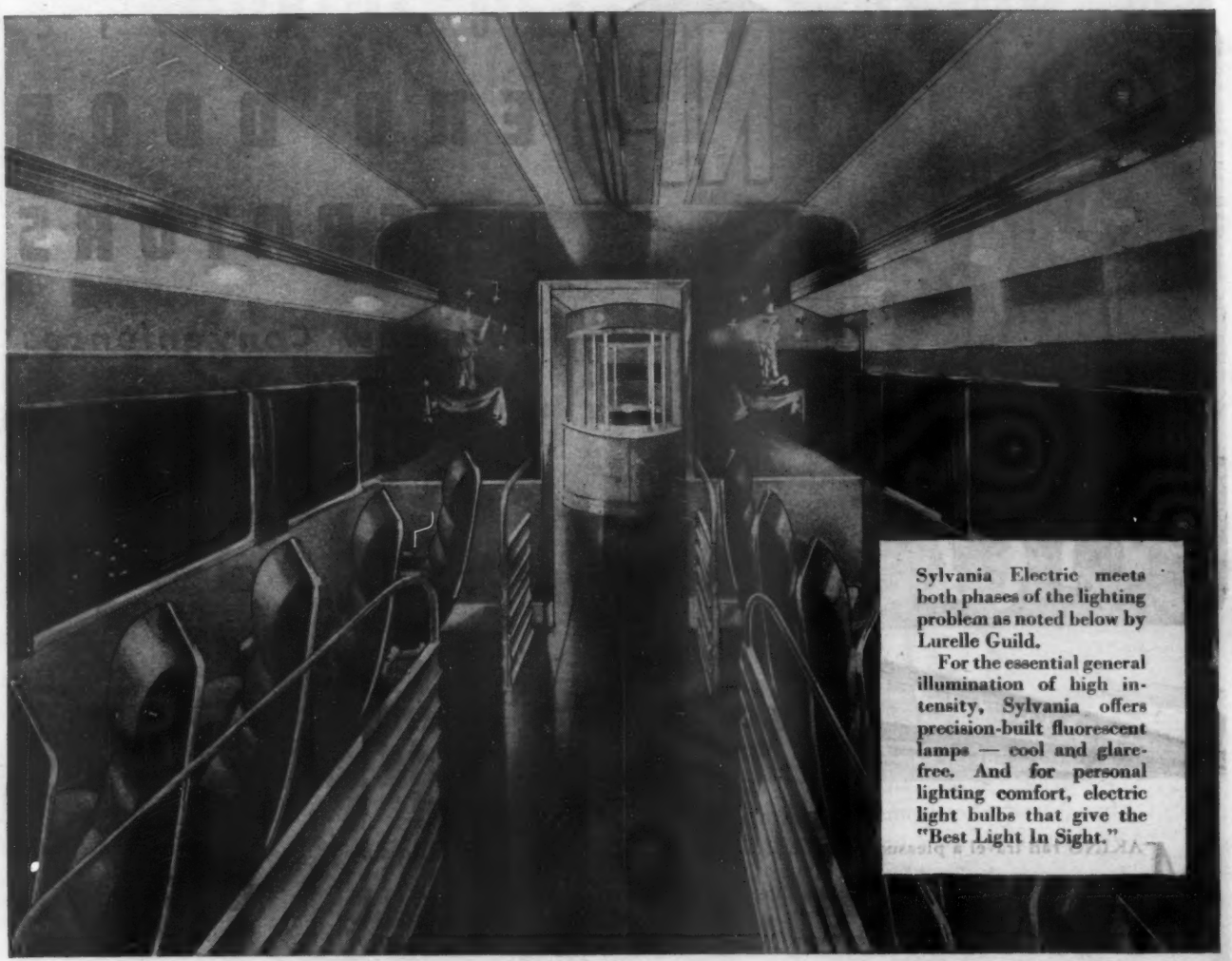
New York, N. Y. ★ Rahway, N. J. ★ Chicago, Ill.

WORLD'S LARGEST BUILDER OF DOOR CONTROL EQUIPMENT

FOR MASS TRANSPORTATION VEHICLES

Railway Lighting Ideas

by LURELLE GUILD



Sylvania Electric meets both phases of the lighting problem as noted below by Lurelle Guild.

For the essential general illumination of high intensity, Sylvania offers precision-built fluorescent lamps — cool and glare-free. And for personal lighting comfort, electric light bulbs that give the "Best Light In Sight."

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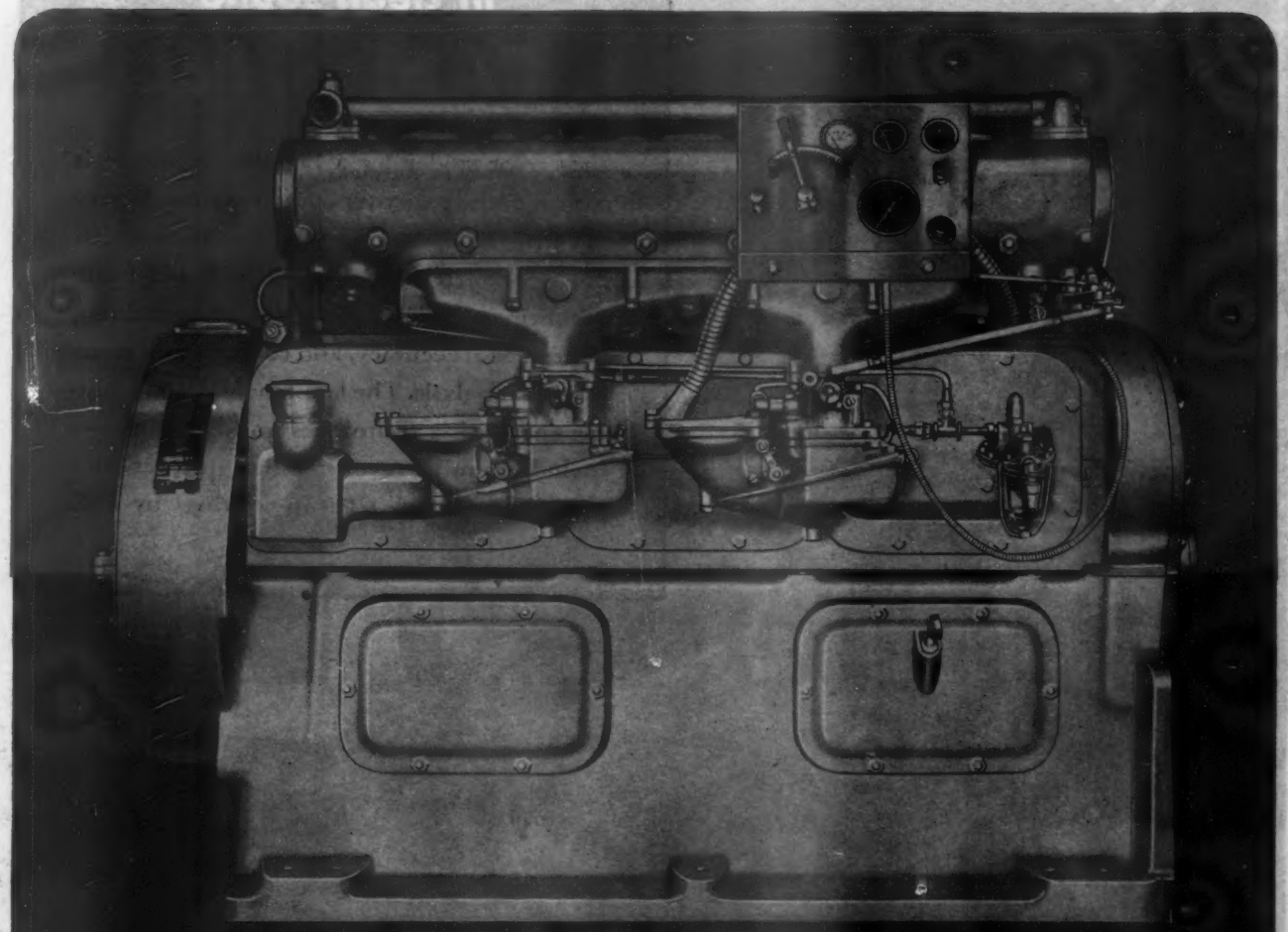

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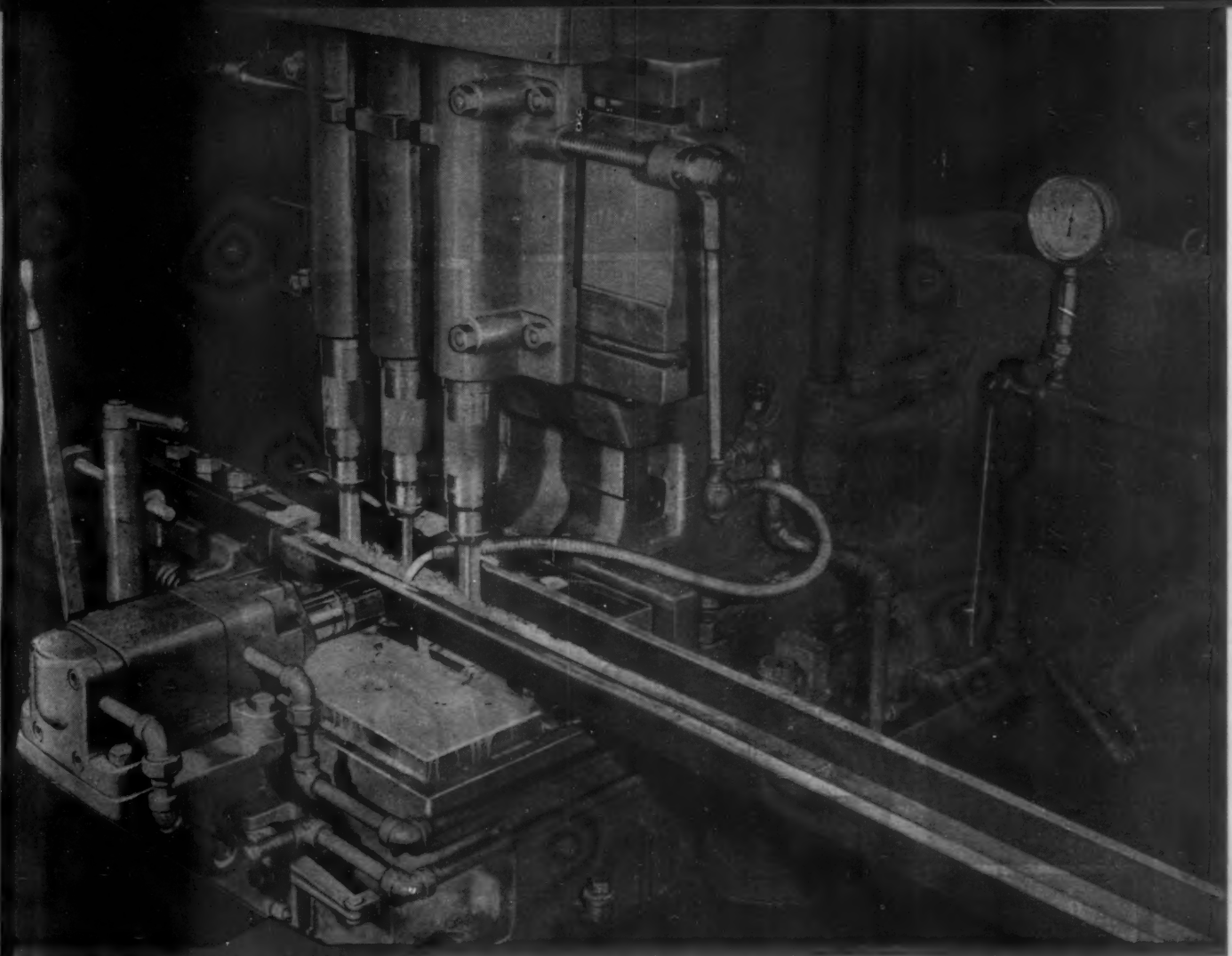

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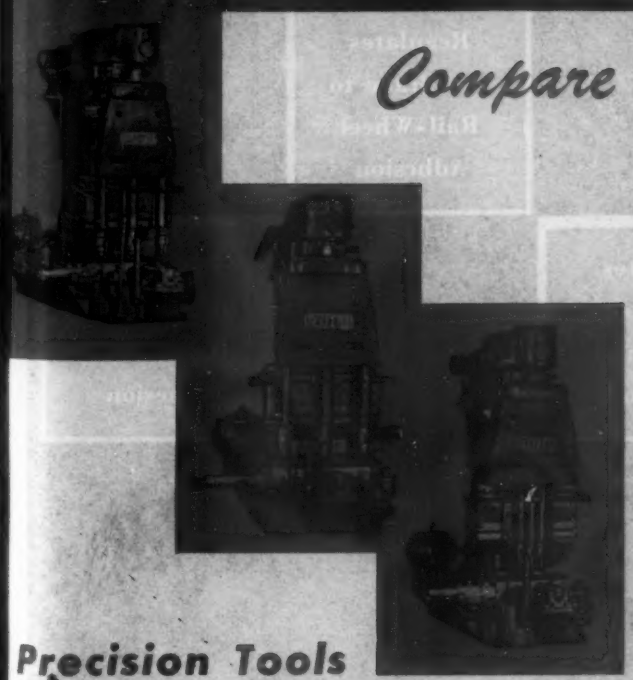

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Operation of one of the world's longest and most tedious supply lifelines by the 3rd M.R.S., which delivered 3,000,000 long tons of war materials to Russia in 30 months, is described and illustrated.

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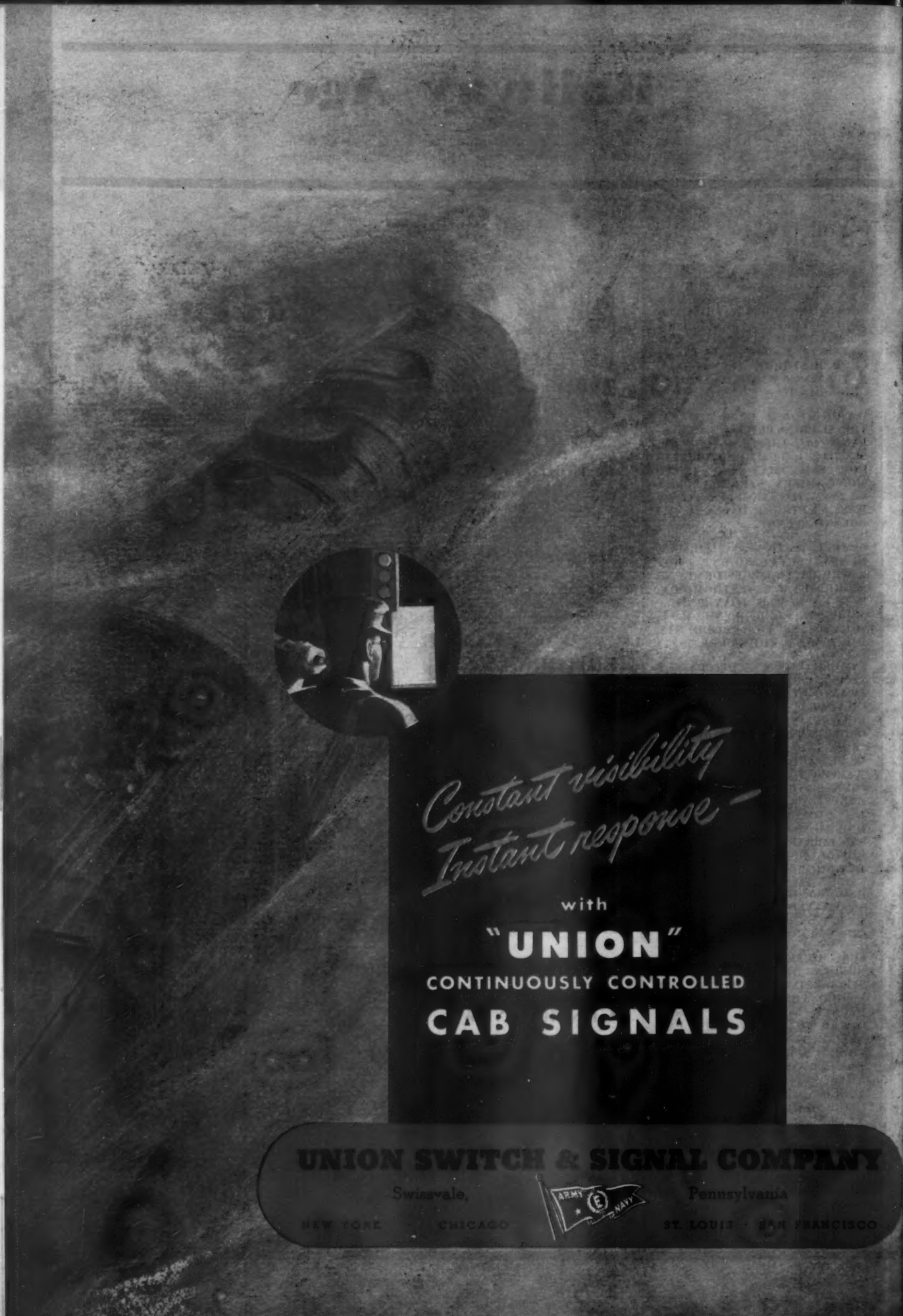
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The Week at a Glance

GOING PLACES—BUT WHERE?: No longer satisfied with following "in lieu" detours around the hold-the-line sign on the route toward all-out wage increases, some more of the brothers appear to have decided now to plunge boldly through that "no thoroughfare" barricade (already so badly battered that maybe they couldn't see it, even though they undoubtedly have heard it mentioned by some very distinguished persons) with a demand for a straight hike in pay of a modest 25 per cent, plus about four dozen miscellaneous but not exactly minuscule requests of the featherbedding variety. This week's news pages contain some revelations of what the leadership of a substantial segment of the railroads' employees is offering in the way of a contribution to the industry's preparations for the post-war competition for business.

●

FAST FOOT WORK: A couple of weeks or so ago the Under Secretary of War was telling the nation through the press that the Army wasn't getting everything it wanted in the way of passenger accommodations for troops, and he "insisted" on full and prompt compliance with all of his demands, come hell or high water. But since then Colonel Johnson, and War Mobilizer Vinson, and the well-informed and powerful Mead committee of the Senate, among others, have had something to say about the matter, and, as this issue's news columns reveal, Mr. Patterson has suddenly changed gears. Now the War Department's publicity begins to radiate enthusiasm for cooperation, to express commendable consideration for the physical limitations of a system of railroads that has had to live on its fat ever since the war started, and to concede even that civilian business does have a right to use the railroads after all.

●

FAREWELL TO IRAN: An illustrated article on page 142 gives a further description of operating conditions on the Iranian State Railway during the 30 months when the American 3rd Military Railway Service had the responsibility of making that line do things it had never done before. Despite the fact that Army railroaders, as a part of the day's work, have to take chances that would be inconceivable in regular civilian operation, not a soldier was killed or permanently injured in a main-line accident while the State Railway was in American hands. In order to increase the line's capacity, 5,175 freight cars and 180 locomotives were added to its pre-war equipment, which was about as heterogeneous a collection as the world could provide.

●

SOMETHING TO FIGHT FOR: Private enterprise cannot compete successfully, in the long run, with socialized industry, because private business, unlike that which is subsidized by the government, cannot force non-customers to help pay for what customers buy. Consequently more and more customers are lured away from private enterprise by its superficially lower-priced socialized competitor, with all-out socialism as the inevitable end product. This is one point developed in the discussion in the leading editorial herein of the fundamental reasons why socialism—or any sort of totalitarianism—is the last thing in the world the union member and the small, independent business man should allow to flourish and proliferate in this country. Reasons are set forth why leaders of "labor" and believers in the capitalist system would be well advised to ask themselves if it is not already later than they think.

●

MECHANICAL DIVISION: Being forced by war-time conditions again to forego its annual meeting, the A. A. R. Mechanical Division performed its essential business in a General Committee session at Chicago, at which the reports of 11 standing committees were submitted. Present officers will continue to serve until the next regular meeting. A large part of the feature article space in this issue is devoted to the presentation of the committee reports, most of which necessarily were curtailed this year by force of circumstances arising from the railroads' war job.

●

MODERNIZED MANUAL BLOCK: Out on the Wabash they have developed something out of the ordinary in the way of a remote-controlled signaling system for single-track operation with medium traffic density. It is described in an illustrated article on page 133. The installation gives absolute manual blocking with continuous track circuit protection, all signals being under the dispatcher's control, and territories as much as 67 miles long are operated from one office.

●

RATE CHANGES HELD UP: The Interstate Commerce Commission this week gave the railroads a little more time to carry out the immense task of recalculating class rates to comply with the requirement of the order in No. 28300 that existing bases be adjusted up or down *ad interim*.

●

TIE RENEWALS: Statistics on crosstie renewals for 1944 appear in this issue. Despite labor difficulties and reduced production, which threaten to upset schedules in the period immediately ahead, the net result in 1944, so far as Class I roads are concerned, was an increase of 5.8 per cent in renewals, as compared with the preceding year.

●

ITEMS IN THE NEWS: Electro-Motive has something different in the way of a Diesel-powered passenger train for after-the-war travelers. . . . Rail production is behind schedule. . . . The airlines are talking about providing five times the cargo capacity they had in 1944. . . . The O. D. T. has told the railroads not to sell tickets or Pullman space to travel agencies. . . . The truckers want l.c.l. left out if the interim class rate adjustments go into effect as ordered. . . . Senator Wheeler this week introduced "by request" a bill to amend the Interstate Commerce Act to require associations of carriers to file reports with the commission.

MAN HUNT: In his own inimitable rambunctious way, Colonel Johnson seems to have accomplished what no one else had been able to do, that is, to wake up the country, and even some of the right people in Washington, to the fact that the railroads, especially in the western states, are not going to be able to handle "redeployment," plus the movement of war materials to the Pacific coast ports, unless they get more men to do the work. What the net results will be remains to be seen—and the account in this issue of the O. D. T. director's illuminating statement to the Mead committee discloses his own opinion that the prospect just now is "gloomy"—but at any rate there is evidence at last of some real concern over the disastrous potentialities on the part of people who can do something to better the situation.

●

DEFICIT ADMITTED: Not being able to pull a bookkeeping rabbit out of its hat this year with which to make a loss look like a profit, the federal barge lines have owned up to red-ink figures amounting to $385,545 on 1944 operations. And this was for a period when the country really taxed its transportation capacity, and needed every usable inch in its "yardsticks." As usual, the corporation's report makes much ado over the "savings" to the public resulting from its operations—and there's no getting around the fact that it could have "saved" its customers even more by the simple expedient of running up a still bigger deficit.

●

NO MONEY BACK: In apparent indifference to the inequity of the situation, Congress, as a news story explains, has failed to allow reorganized railroads (if, under state laws, they have had to get new charters) the privilege enjoyed by corporations generally, including other railroads—whether they are paying dividends or still in the painful processes of bankruptcy—of carrying over or carrying back, for excess profits tax purposes, operating losses or unused tax credits.

●

TIME TO COMMENCE: For the past fifteen years or more the railroads, generally speaking, have had to see their fixed properties getting steadily more and more dilapidated, more and more in need of modernization. For almost as long, and especially since the war gave the bureaucrats an opportunity to manage the country's business from Washington, some railroads have had to do without new locomotives and cars of the types they needed to carry out the day's work efficiently and economically. But—as two editorials in this issue point out—circumstances have changed at long last, and it is now possible to buy, or at least to place orders for, equipment that's long overdue, and to begin to catch up on postponed upkeep, and to get started on many a long-deferred plan for bettering the property (and at the same time making it more efficient). Everything can't be done overnight, but the facts add up to the very significant conclusion that the time to start on these projects is now.

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Urgent boosts in production are more than a matter of manpower, machines and shop space. They demand an electrical system that's not "frozen" by outmoded standards . . . that's expandable to meet output increases without costly ripping-out for rewiring operations.

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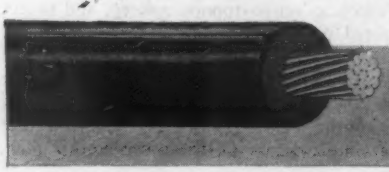

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RAILWAY AGE

Progress Toward Socialism

What people do about socialism, rather than what they think or say about it, will mainly determine whether that despotic economic system is adopted in this country. A great deal of anti-socialistic writing and oratory is being produced, but very little is being *done* to halt the political undermining of private enterprise which, if the undermining proceeds much further, will yield place to some form of socialism.

The principal force which is promoting socialism is the habit into which practically all economic groups have fallen of "voting themselves something" whenever they can—whether it be a tariff, a larger pension, a wage increase, or some "public improvement"—at other people's expense. A prominent railroad attorney recently delivered an address to a group of business men in a midwestern city in which he attacked toll-free waterway improvements as socialism, and, hence, an inconsistent objective for a group of business men who would resent having the epithet "socialist" applied to them. At the end of the meeting a business man from the audience who had been actively seeking waterway improvements for his community at federal expense, inquired of the speaker: "Why shouldn't our town be given a waterway, to equalize our opportunities for low-priced transportation with competing communities which have already received this favor at the hands of the federal government, placing this city at an unfair disadvantage?"

Treating All Communities Alike

The speaker conceded that equal treatment of communities by the federal government is a correct principle, but he pointed out that such equality of treatment could be secured in another way than by putting a toll-free waterway into each locality demanding it. The alternative—and the only course consistent with the principles of free enterprise—would be for the federal government to levy tolls on its waterways sufficient to defray all costs. If that were done, communities without waterway improvements would be at no unfair advantage in comparison with those with improved waterways, because, in either case, the shipper and not the taxpayer would be paying the bill.

The essence of socialism is the shifting of costs of an economic service or commodity from the purchasers to somebody else, usually the general taxpayers.

It is not necessary that economic services provided under government ownership have their costs socialized. The Post Office Department, generally speaking, carries on its business in much the same way that a public utility in private ownership does—except that its patrons are not charged rates to cover taxes and capital costs on post office property. The services of the Port of New York Authority, also, are largely self-sustaining, except that it, too, enjoys favors in taxation which would not be extended to a similar corporation in private ownership.

How to "Desocialize" the Highways

But wherever there is *not* a close identity between the user of a governmental economic service and the person who defrays the cost of that service—there is, necessarily, a shifting of cost from the direct beneficiary to somebody else, i.e., socialization has taken place. This shifting of costs away from direct beneficiaries creates a condition against which private enterprise cannot compete, because *private enterprise has no coercive weapon, as government has, to force non-customers to help pay for what customers buy.* Socialized government enterprise, therefore, even though it be less efficient than private enterprise, can usually offer prices to take away the customers of private enterprise; and it is a progressive disease, as the instance cited in the opening paragraphs above indicates, because when any one producer is given the advantage of having the prices of the things he buys diminished by the whole or partial shifting of the costs to somebody else, then any other citizen has a persuasive argument in demanding an equivalent socialization of the costs of the things *he* buys.

Costs of inland waterways are wholly socialized and costs of highways are highly socialized. It is true in the case of highways that the users, in general, pay considerably toward the total costs—but *highway costs are socialized even among highway users,* because of the fact that there is no close correspondence between levies on individual highway users and the cost of the facilities they actually use. The license fee on a poor little jallopy in a rural district which never gets a trip on a decent road goes to help pay for the superhighway ride of an intercity truck which never turns a wheel on a roadway costing less than $200,000 a mile. To "desocialize" highway transportation it would be necessary not only to raise total collections from highway users to a sum equivalent to total highway costs, but also to graduate fees carefully in proportion to ton-mileage and to establish a system of tolls on all extra-expensive facilities so that the direct beneficiaries, and not all highway users, would defray such heavily localized costs.

Socialism Hits "Little Fellow" the Hardest

Many of the most strident orators against socialism in the abstract are its most enthusiastic promoters in specific situations such as those outlined in the foregoing. Persons interested in socialism—as all alert Americans ought to be, considering how effectively our leaders in business, labor and government are working to

establish it—will find instruction in the article by Peter Drucker on wage practices in Soviet Russia in the July 21 "Saturday Evening Post."

Russia's socialism is practical and not theoretical—and Drucker tells how the force of circumstances has led in that country to a far wider difference in income between managers and the rank-and-file from that which exists under capitalism, with stern penalties for workers who do not exert themselves to the utmost. A little more knowledge of the actual effects of socialism on the "common man" in whose interest it allegedly works would make the "little fellow," and particularly the labor unionist, its staunchest opponent—which is to say that such knowledge would induce him to struggle harder than anybody else to make private enterprise prosperous and successful. But leaders of labor are as backward as are leaders in government and business in making their actions in defense of free enterprise conform to their devotion to it in the abstract.

This Investigation Must Be a Success!

The Congressional investigation into national transportation policy announced by Chairman Lea of the House Committee on Interstate Commerce must prove a greater success in practical results than the many studies, official, semi-official and private, which have preceded it, or the transportation industry—and especially the railroads—will be in a bad way. This follows because, transportation problems being so complex, they cannot be dealt with realistically without studious inquiry—but, so many of these inquiries having proved unproductive of concrete results, the device itself is beginning to get a bad name.

Some circumstances about the inquiry proposed by Chairman Lea give assurance that it will not follow the relatively unproductive course of its predecessors. The first of these is that it has been proposed and will doubtless be supervised by a man of Mr. Lea's reputation for disinterestedness and integrity. Another favorable circumstance is the fact that it is experienced Congressmen themselves—and not some group of outside "experts" of varying reputations—who will conduct the investigation. The members of the subcommittee named by Chairman Lea and reported in last week's *Railway Age* are all men of experience in dealing with transportation legislation—and, doubtless, after they take all the evidence and reach their conclusions, their colleagues in Congress will pay more heed to their recommendations than they would to those of any group of outside "experts" not well known to individual Congressmen.

Our only misgivings regarding the present set-up lie in the absence of legislators who are identified with the development of highway and waterway transportation from the investigating committee. This inquiry cannot be successful unless it gets into the spheres under the jurisdiction of the Congressional committees which deal with highways and waterways; and the conclusions reached could scarcely fail to make a stronger impression if all important aspects of national policy toward transportation were included, embodying the recommendations of the Congressmen responsible for all phases of transportation legislation, and not merely the regulatory aspects, which are the peculiar province of the Committee on Interstate Commerce.

It is evident that the various transportation interests are not minimizing the importance of this inquiry, and are already making preliminary plans, each of them to make the strongest possible presentation of its own special viewpoint. This, of course, is important—but more important still, and by far, is that any organizational flaws in the way the investigation is instituted be sought out and eradicated. It will not help the railroads or any other form of transportation to make a presentation of its case which is perfection itself if the recommendations of the tribunal, when arrived at, are not going to be translated into action by appropriate legislation.

The most important consideration at the present stage appears to be to remove as far as possible all occasion for controversy about the competency and authority of the committee to consider all phases of the transportation situation. A good start has been made in this direction; and there should now follow whatever additional steps are necessary to give these investigators the unquestioned prestige among their colleagues and with the public which will lead to a predisposition to accept their recommendations. If another comprehensive official study of transportation—and especially one undertaken at the present juncture by Congress itself—should prove a dud, there seems very little basis for hope of achieving a reasonable and systematic national policy toward transportation.

Start Improvements Now

In the coming competitive struggle in transportation it is evident that the degree of success attained by the railroads will depend to a great extent on the adequacy of their fixed properties. It is obvious also that the railroads' ability to meet competition will be contingent in large part on whether, and how soon, they are able to make the improvements in their fixed plants needed in the interest of better service and reduced costs.

For the last decade and a half most of the railroads have been falling behind steadily in their efforts to keep their properties up to date by necessary additions and betterments. First, there was the depression with its accompanying reduced earnings, requiring that the expenditure of funds for improvements be held to a minimum. More recently, with earnings showing great improvement, shortages of materials and labor have been the retarding factors. While the roads have been permitted to make certain improvements during the war years, these have been confined for the most part to projects that government agencies have considered necessary to the war effort, with the result that entire categories of undertakings have necessarily been neglected. This is why the railroads are now further behind than ever in regard to such classifications of projects as station modernization, curve reduction, and the improvement of engine terminals, freight yards and related facilities.

Recognizing that the renovation and modernization

of the properties in these and other respects are vitally necessary for post-war prosperity, the engineering departments of many roads have extensive plans for improvements to be carried out when conditions permit. An important factor in planning the execution of such projects is that restrictions on construction work are not going to be removed overnight; rather there will be a transition period in which restrictions and shortages will undergo a gradual process of relaxation. Hence, by taking proper advantage of new developments as they occur the railroads will be able gradually to expand their efforts in the direction of making needed improvements.

There is an element of urgency in the situation that should inspire the roads to take immediate advantage of every change for the better. Because of the large volume of work to be done, it would require years, even with unrestricted activity, before it would be possible to say that a satisfactory degree of modernization had been achieved. Therefore, if the roads do not get a quick start in improving their properties wherever opportunity offers, it is certain that the delay will react to their disadvantage in competing with other forms of transport.

Railroad engineering departments do not have to wait for somebody to give the signal for starting their improvement programs, but should take the initiative with the idea of beginning such activities *now*, to the extent possible, and of expanding them as rapidly as practicable by taking prompt advantage of current developments affecting the availability and use of materials and manpower.

The Onlooker: "Go ahead, kid. The ice is two feet thick."

Where "Free Enterprise" Has Abdicated to Politics

The time may come when friends of highway transportation will wish that they had left the magnitude of expenditures on highway improvements to determination by the automatic forces of the market place—instead of entrusting the future of these facilities, as they have so completely, to the generosity of politicians. It is true that political liberality has not yet failed the highway interests, but when such important decisions are taken away from economics and handed over to politics, it is personal whim and not economic merit which thereafter has the say-so on whether improvements are to be made or not. A personal predilection that has been generous could turn niggardly.

The New York Times recently commented editorially upon a report by the contractors' division of the American Road Builders' Association that Administration leaders in Washington are planning annual expenditures of $5 billion on "public works." "Such grandiose spending plans," said the Times, "represent a wrong approach to the real problem that confronts us. The great post-war fiscal problem will be to prevent a runaway inflation. It will be to bring the federal budget into manageable dimensions and under reasonable control."

As long as the magnitude of highway construction projects is kept dependent upon political appropriations instead of upon the economic demand of highway users for new facilities which they are willing to pay for, the danger will persist that political conditions and governmental budgetary necessities may force a curtailment of highway improvement at the very time when the economic need for improved highways may be greatest. It is true that, so far, highway development does not appear to have been minimized by having been entrusted to politics. Its successful financing at the hands of politics may have arisen, however, merely from the coincidence that highway development came along at a time when politics had an opportunity to be lavish. It is as certain as anything can be that governments cannot continue indefinitely to be as spendthrift as they have been up until the present, because they cannot be so and retain their solvency.

It is a curious anomaly—this lack of faith of the great highway transport industry and its affiliates in their ability to prosper if they rely entirely upon the voluntary demand of uncoerced customers for their products. The little entrepreneurs of the pants business and the

retail grocery trade embark all their savings hopefully, confident of their power to attract buyers, without first seeking several billions of "federal aid" to enable them to make their product artificially inviting by permitting its sale below actual cost, as highway transportation is sold. By contrast, the predominant opinion in the highway transportation industry appears to be that a large part of its costs must be levied on the people as taxes rather than reflected in prices, or the industry's customers will be frightened away.

Winston Churchill was recently quoted as saying that, in a choice between duty and self-interest, a wise man will follow the path of duty—because he always knows where his duty lies, but he cannot be sure of his interest.

Railways Can't Blame Washington in Future

The announcement on July 17 by the War Production Board that it was relinquishing its control, under orders L-97 and L-97-a, over the production of new locomotives and freight and passenger cars, now puts squarely up to the railroads the problem of assuring themselves of an adequate inventory of locomotives and car equipment. Although during these war years the railroads have never been prohibited from making their equipment needs known, they have definitely not been allowed to place any orders without the prior scrutiny of the War Production Board and other interested government agencies. The confusions created in the Washington handling of the railway equipment situation have served, it would seem, in many cases to discourage the railroads from even attempting to place orders. This has been particularly true in the case of freight cars, because the orders, even if approved, did not result in the delivery of modern equipment, but rather in the construction of cars already obsolete when they were released from the builders' plants.

However much of the present sad state of the freight-car inventory of the country is due to fumbling in Washington and how much to the fact that the railroads have not been as aggressive as they might have been in pressing for vitally needed additional cars, is no longer particularly important; nor is the fact that the much-lauded logistical approach to war on the part of our military authorities failed to take fully into consideration the basic domestic rail transportation picture. What is most important is the fact that there is still a war of unknown length to be fought, involving the movement of tremendous quantities of the materials of war, while the domestic economy and partial reconversion of industry must also be supported.

The railroads now have their opportunity to order in the quantities needed locomotives and freight and passenger cars. Certainly there should be no excuse for any railroad not being immediately able to order known minimum needs in these equipment fields. It may well be that no road can at the present time project a long-range replacement and new installation program, but surely every road knows of certain classes of equipment now running which, for reasons either of safety or economy, should be retired and replaced as soon as possible.

There is no reason to believe that the action of the War Production Board means anything other than what it says, and that is that builders may accept and schedule for production, without prior authority, orders for steam and Diesel-electric engines and freight and passenger cars. The fact that rescheduling may be required if highly essential needs of the military services or war-supporting agencies so dictate should not affect the placement of orders at an early date. That this relaxation in the regulations of the W. P. B. comes too late to be of much practical value during the remainder of this year, which will be a most critical time, at least so far as freight cars are concerned, is a fact which should not be overlooked. A breakdown in the prompt movement of freight is possible. In the opinion of many, the action might well have been taken several months ago in time to permit the construction and delivery of car equipment during the last quarter of the year, and a partial relaxation, sufficient to permit greater numbers of cars to have been built, could probably have been justified nine or ten months ago.

It is an encouraging sign that now the railroads can deal directly with their sources of supply. The speed with which they do so can affect very definitely their own future prospects and ability to handle traffic. If they must continue for a period of months to operate under conditions of increasing car shortages and a general deterioration in car structures, they at least can now learn from manufacturers when deliveries of replacements can reasonably be expected. It has been more than three years since this was true; the change itself should be enough to start orders piling up on builders' books.

C - A - I - C!

Some of our good citizens who have made mistakes and know it are wearing about town, with the saving grace of American sportsmanship and sense of humor, flashy red lapel buttons proclaiming these letters in white: "C - A - I - C!"

Questioned, they reply: "That? Oh, that stands for 'Cripes! Am I Confused'!"

There, citizens, is a button for every citizen in these times—and certainly one to be worn big and bright by the citizenry's government.

Cases in countless numbers have been plain in the past 12 years of the federal government's declaration by mouth and opposite action by hand, its flip-flop on policy and practice, and, worst of all, one section of it ordering one thing and another bureau then prosecuting because the order has been carried out.

Among the victims of this confusion have been the country's railroads. Probably no single industry has had so tremendous a wartime problem thrust upon it. The miracles of war transportation the railroads have accomplished, by consultation and cooperation, have been made possible only by such joint action, which was based in the first place on operating provisions of the Interstate Commerce Act.

But now the anti-trust division of the Department of Justice (same government, different office) suddenly decides that such operations are unlawful under the anti-trust act.

In other words, for doing what they were told to do by the Interstate Commerce Commission, the railroads are hit over the head by the justice department.

C - A - I - C!

—Wisconsin State Journal (Madison)

Wabash Develops New Signal System

Known as "manual block-remote control" the innovation uses absolute manual block rules with track-circuit protection with all signals controlled by the dispatcher

THE Wabash has developed a signaling system known as manual block-remote control for use on medium-traffic single-track lines where train speeds are relatively uniform, and following trains are not spaced closely, with the result that traffic interference is caused primarily by opposing trains. The system includes the positive manual-block principle of operation as a basis for the increased safety of operation. In addition to the usual siding-to-siding block, short blocks were established at the meeting points. To increase safety, continuous track circuit protection is included. The manual block signals on an extended territory of up to 67 miles or more are controlled remotely from one office.

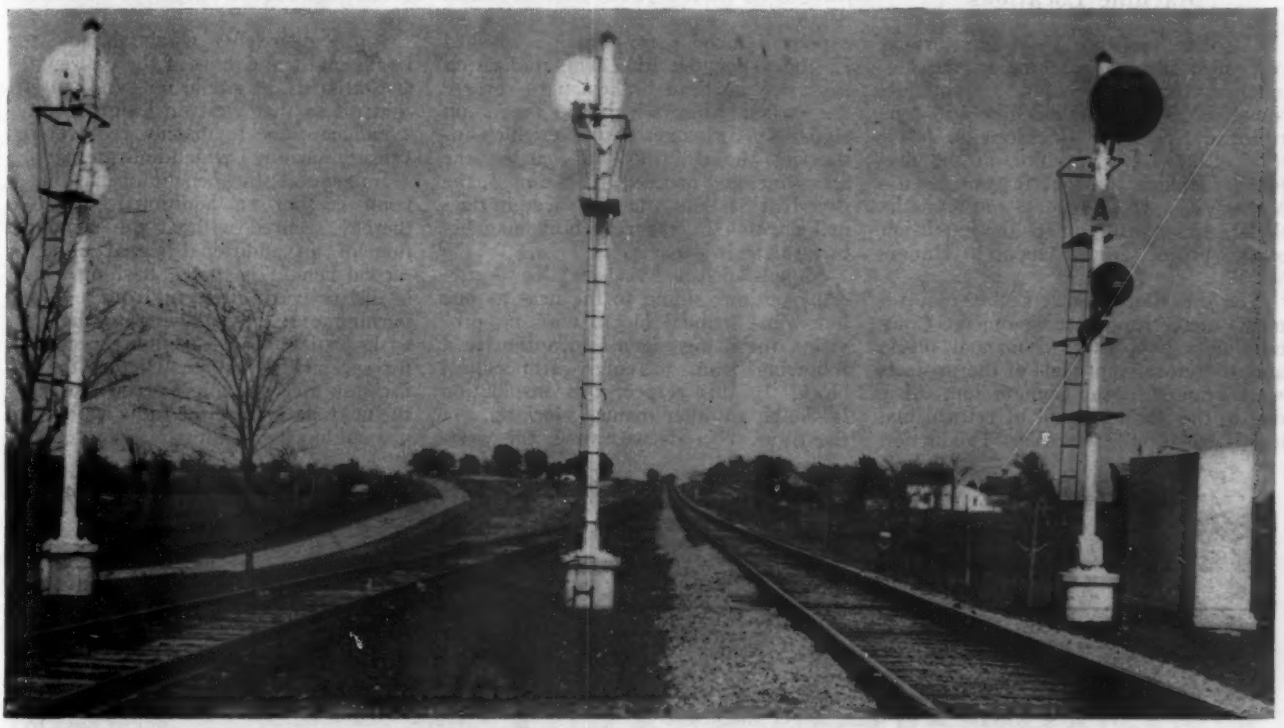
As a result of the war-time restrictions in the use of critical materials, it was necessary to develop a system that would require fewer scarce materials, such as line wire, and fewer signals than are ordinarily required for an automatic block installation. Thus the manual block-remote control system was developed as a substitute for and an improvement over automatic block signaling.

The location of the development—a 210-mile single-track connecting line between Decatur, Ill., and Moberly, Mo.—is an important link in a through freight route between Kansas City on the west and Chicago, Detroit, Toledo and other points on the east. One local passenger train is operated in each direction daily on the section between Decatur and Hannibal, 142 miles, but there is no passenger service between Hannibal and Moberly, 68 miles. The number of freight trains may vary from five to ten each way daily, depending on the traffic, tonnage ratings of locomotives and grades on the different sections of the line. On a recent day there were nine trains westward and 7 eastward between Moberly and Hannibal.

Nature of Territory

The line crosses level prairie country between Decatur and Jacksonville, with the exception of the crossing of the Sangemon river just east of Springfield. Between Hannibal and Moberly the railroad passes through rolling hills with numerous curves up to 6 deg. 20 min., and grades up to 1.26 per cent for as much as two miles, and up to 1.1 per cent for up to six miles. The ratings applying to the larger-sized locomotives are 2,950 tons eastbound and 2,700 tons westbound.

Prior to 1943 there was no signaling on any portion of this 210 miles between Decatur and Moberly, train movements being authorized by timetables and train orders. Choosing a section where curves and high banks resulted in short sighting distance, automatic signaling was installed in 1943 on 55 miles between Markham, near Jacksonville, Ill., and Kinderhook. On this project, efforts were made to minimize the use of critical materials, such as copper line wire. Nevertheless, the Wabash realized the impracticability of proceeding with the installation of signaling on the remaining 155 miles between Decatur and Moberly, unless some scheme could be devised to eliminate the copper line control wires and reduce the number of signals and other materials such as were required in the automatic block installation previously completed. On the other hand, on account of the increased volume of important war traffic being handled, it was important to provide a system of protection, as well as a means for expediting train movements. After numerous conferences between representatives of the operating and the signal departments, and with the co-operation of the Union Switch & Signal Co., the Wabash developed this new arrange-



The Three Signals, Such as No. 3, No. 1 and No. 2 at Clearance Point at West End of a Siding on North Side of Main Track, Such as the Layout at Station A, Fig 2

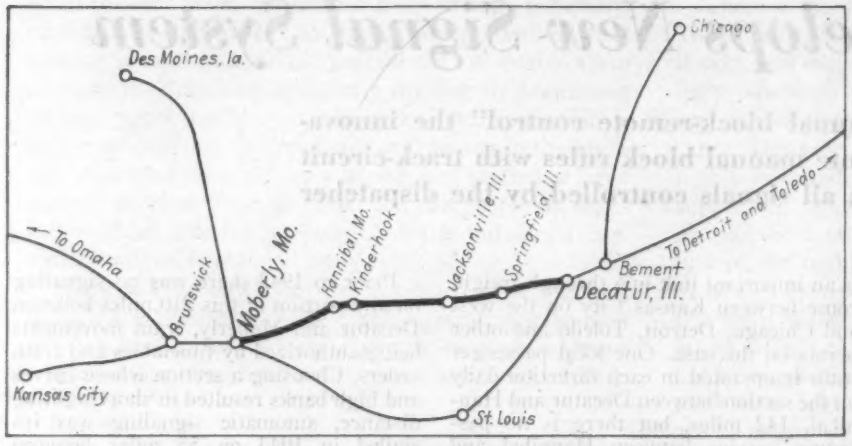


Fig. 1—Map of Part of the Wabash Showing Manual Block-Remote Control Territories

ment of signals and additional aspects for use in manual block signaling under such conditions.

The first installation of this manual block-remote control was placed in service May 21, 1944, on 34.7 miles of single track between Decatur, Ill., and Starne interlocking near Springfield, Ill. The experience with this project was satisfactory, and a second installation on 39.1 miles between Moberly and Clapper, Mo., was authorized, this being completed on April 1, 1945. Authorities have been granted and materials ordered to complete two more projects this year; on 37 miles between Springfield and Jacksonville, and 28.5 miles between Clapper and Hannibal. The four projects will total 134 miles of manual block-remote control.

Machine Locations

The Decatur-Springfield territory is controlled from a machine in the dispatcher's office at Decatur, and an additional section for this machine will control the Springfield-Jacksonville territory. Likewise a machine in the dispatcher's office at Moberly controls the Moberly-Clapper territory, and an additional section will control the extension of this project from Clapper to Hannibal.

The installation meets the requirements of the Interstate Commerce Commission as applying to manual block, and, therefore, approvals of the projects were granted by the Commission. Also, due to the small amount of critical materials required, the War Production Board has authorized the construction and allotments of materials.

New Signaling Arrangement

In Fig. 2 at Station A the main-track westward station-leaving signal No. 1 normally displays the red aspect, which indicates an absolute stop. If there is no train between this signal No. 1 and signal No. 7 at Station B, and also if the dispatcher sends out the proper control, signal No. 1 operates to display the green aspect, thus authorizing a westbound train on the main track at Station A to proceed to signal No. 7 at Station B.

In Fig. 3, if there is a westbound train on the siding at Station A, and the dispatcher is ready for this train to depart, he sends out a control, and if there is no train between Station A and Station B, signal No. 3 displays an aspect of lunar white which is flashed 75 times per minute. This indication instructs the head brakeman to reverse the switch, after which the aspect on signal No. 3 changes to green, which authorizes the train to pull out on the main line, and proceed to Station B, the switch at Station A being placed in normal position by the rear brakeman before the train departs.

Signals such as No. 1 and No. 3 govern from one siding to the next as one individual manual block, with no provision for using signals to authorize a following train to enter an occupied block. In this respect this installation is similar to other manual blocking. As the train proceeds westward, the westward approach signal No. 5 provides advance information as to whether the train is to be stopped short of the next siding switch or is to proceed beyond that switch without stopping.

Take-Siding Operation

Referring now to Fig. 4, if the westbound train is to be directed to take siding at Station B, then westward signal No. 7 at Station B is controlled by the dispatcher to display red in the top unit and flashing red in the bottom unit, while at the same time, approach signal No. 5 displays yellow as advance information. Accordingly, the westbound train stops short of the switch at the east end at Station B. After the head brakeman throws the switch, the train enters the siding and the switch is placed in normal position.

Referring to Fig. 5, if the dispatcher wants the westbound train to hold the main track and pull on down to stop short of signal No. 9 to wait for a meet with a train that is to take siding, he sends out a control which causes westward main track signal No. 7 to display red in the top unit over a flashing yellow in the bottom unit.

Referring now to Fig. 6, if the westbound train is to be authorized to proceed on the main track through Station B and to continue on the main track to Station C, then the dispatcher sends out two controls, one of which causes westward main track station-leaving signal No. 9 at the west end of Station B to display the green aspect, and the second control causes westward main-track station-entering signal No. 7 to display an aspect of green-over-red. Not until signal No. 9 displays green, can the green-over-red be displayed on signal No. 7.

If the dispatcher wants to hold the westbound train short of the east switch at Station B, he would not send out any control, so that westward signal No. 7 would continue to display red-over-red (steady burning) which indicates stop.

In general, the benefit of flashing a lamp is that an additional aspect is thereby secured without the complication of an additional signal unit. A second benefit is that a flashing aspect is distinctively different from a steady burning one. As applying to the Wabash project, the flashing aspects are for special instruction, whereas the red for stop and the "high green" to go to the next station are the same as in other manual block signaling.

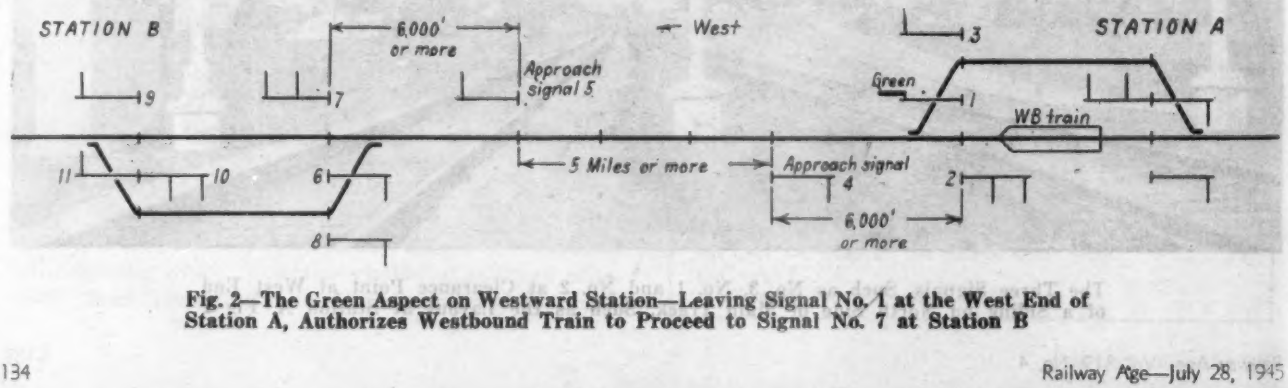


Fig. 2—The Green Aspect on Westward Station—Leaving Signal No. 1 at the West End of Station A, Authorizes Westbound Train to Proceed to Signal No. 7 at Station B

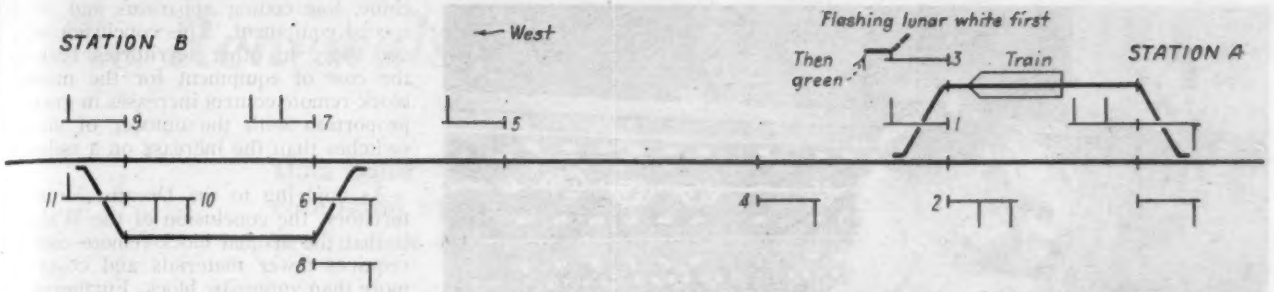


Fig. 3—Flashing Lunar White Aspect on Leave-Siding Signal No. 3 at Station A Authorizes the Head Brakeman to Throw the Switch, Then Aspect Changes to Green Which Authorizes Train to Proceed to Station B

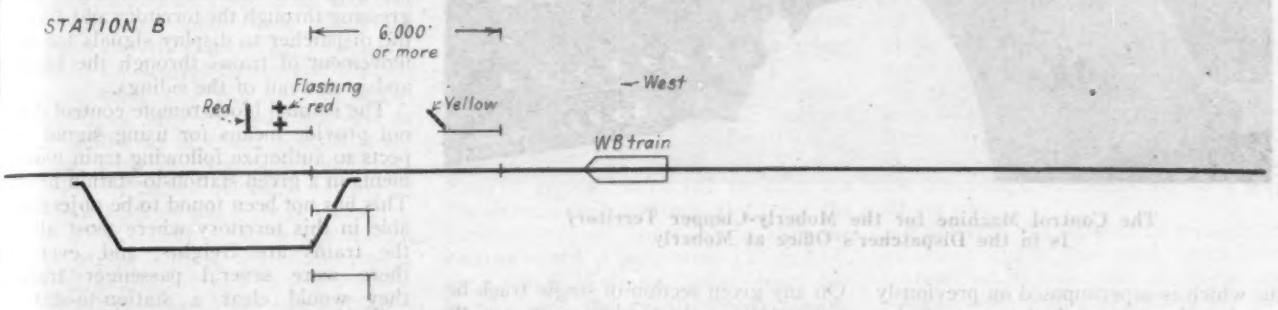


Fig. 4—As Westbound Train Approaches Station B, Yellow Aspect on Distant Signal Gives Advance Information That Train Is to Be Stopped Short of the Switch, and Red-Over-Flashing-Red Aspect on Signal No. 7 Directs Head Brakeman to Throw Switch and Train to Enter Siding, After Which Switch Is Placed in Normal Position

A new idea in the location of signals on this project is that the station-entering signals, such as signal No. 2, Fig. 3, are opposite the fouling point on the turn-out, and, therefore, are in line with signals No. 1 and No. 3, rather than being located in approach to the facing point of the switch as is the practice in automatic block signaling. The Wabash practice, with signal No. 2 in line with the other two signals, allows an eastward train, for example, to stop short of the switch and pull into the siding without the confusing practice of being required to pass a signal indicating Stop. Also the Wabash arrangement permits the elimination of a short track circuit through each switch, thereby reducing the amount of materials required.

An important item in this project is that all signals are high signals, the same as other manual block signals. For example, in Fig. 2, the eastward leave-siding signal No. 8 at Station B is on a high mast, the same as the other signals. Also the westward leave-siding signal No. 11 at Station B is a high signal but in this instance no separate high mast is required because signal 11 is on the east side of the same mast on which eastward station-entering signal 10 is mounted.

In order to eliminate chances for confusion between signals by enginemen, each signal is at the right of the track governed. This practice required that the siding be thrown over to 20-ft. centers, in order to allow clearance for a high signal between the main track and the siding, this being necessary at both ends of each siding.

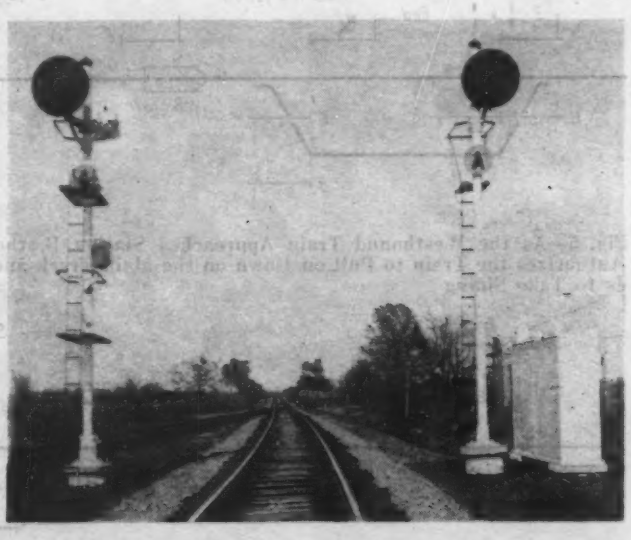
An approach signal, such as signal No. 5 in Fig. 2, is located about 7,000 ft. from its corresponding station-entering signal, such as signal No. 7 at Station B. This distance varies depending on grades and the necessity to shift the location in order to secure maximum sighting distance on curves. With 6,000 to 8,000 ft. between each approach signal and its corresponding station-entering signal, this may leave a distance of up to 5 miles or more between the two approach signals if the distance between sidings is 7 miles or more.

These signals between sidings are approach signals and are controlled as automatic block signals. The fact that only two of these signals are used between two sidings represents a decided saving in the number of signals required as compared with the usual automatic block signaling practice of having two or more intermediate signal locations to provide adequate opposing protection. This protection is provided on this Wabash project by the station-leaving manual block signals.

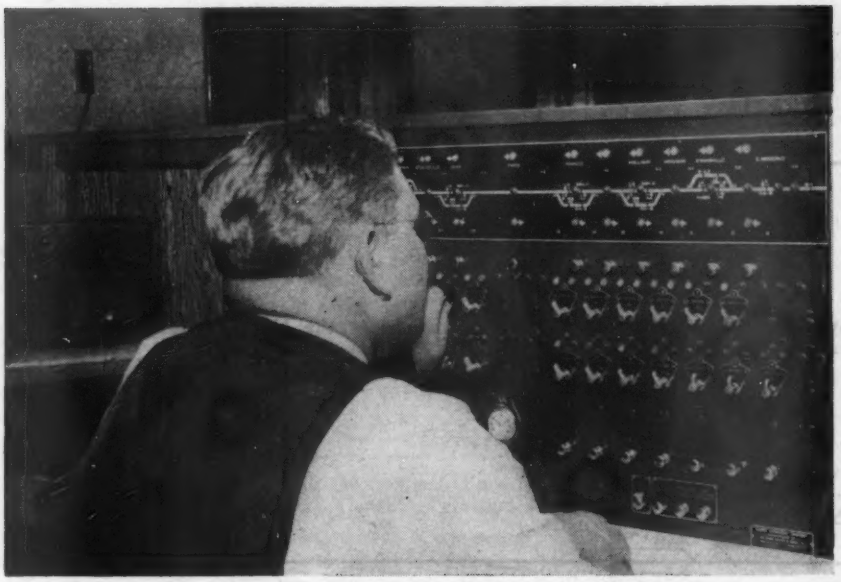
Since these signals are normally at stop and are controlled in only one direction at a time, no protecting intermediate automatic signals are required for opposing movements.

No Line Control Wires

The automatic track circuit controls throughout on all main track on this project are taken care of by modern coded track circuit equipment, thereby obviating line wires for local field control circuits. The manual control of the signals between Decatur and Jacksonville from the dispatcher's office at Decatur is accomplished by coding appara-



The Signals at the East End of a Siding on the North Side of the Main Track Such as at Station A in Fig. 2, the One Mast to the Left Has the Leave-Siding Searchlight Signal on This Side and the Two Searchlight Units on the Other Side



The Control Machine for the Moberly-Clapper Territory Is in the Dispatcher's Office at Moberly

tus which is superimposed on previously existing line wires which are used also for a telephone circuit and connected simplex to handle a telegraph circuit.. Similarly on the Moberly-Hannibal territory the controls from the dispatcher's office are handled by coding apparatus superimposed on the previously existing line wires which also carry the telephone train dispatching circuit and are connected simplex to carry a telegraph circuit.

A commercial supply of a-c. at 220 volts was available at or near each station, and a pair of No. 9 galvanized-iron line wires are installed the length of each siding to carry this a-c. out to the instrument house at the two switches to be used in charging storage batteries. On any given section of single track between sidings the track circuits and the two approach signals are fed from a primary battery, thus eliminating the requirement for a line circuit to distribute a-c. power.

Thus the installation of this signaling required no new line wires with the exception of the two iron wires for a-c. power the length of each siding.

Important Conclusions

The reduction in line wire and the number of signals between sidings on this manual block project, as compared with the 1943 automatic block signaling between Jacksonville and Hannibal, just about offsets the cost of the control machine, line coding apparatus and other special equipment. This conclusion may not apply in other territories because the cost of equipment for the manual block-remote control increases in greater proportion with the number of siding switches than the increase on a mileage basis.

As applying to the Decatur-Moberly territory, the conclusion of the Wabash is that the manual block-remote control requires fewer materials and costs no more than automatic block. Furthermore the manual block not only affords complete automatic protection against head-on or rear-end collisions but also give the dispatcher information of trains progressing through the territory and allows the dispatcher to display signals for the movement of trains through the blocks and in and out of the sidings.

The manual block-remote control does not provide means for using signal aspects to authorize following train movements in a given station-to-station block. This has not been found to be objectionable in this territory where most all of the trains are freights, and, even if there were several passenger trains, they would clear a station-to-station block in a few minutes. Of much more importance, as compared with straight automatic block, is the fact that with the manual block the dispatcher is informed automatically by his panel concerning the progress being made by each train, and, based on this minute-to-minute information, he can control the signals to make the trains meet on very close time.

This installation of manual block-remote control was planned and installed by signal forces of the Wabash, under the direction of G. A. Rodger, signal engineer, the major items of signal equipment being furnished by the Union Switch & Signal Co. The instrument cases were wired complete in the Wabash signal shop at Decatur, Ill.

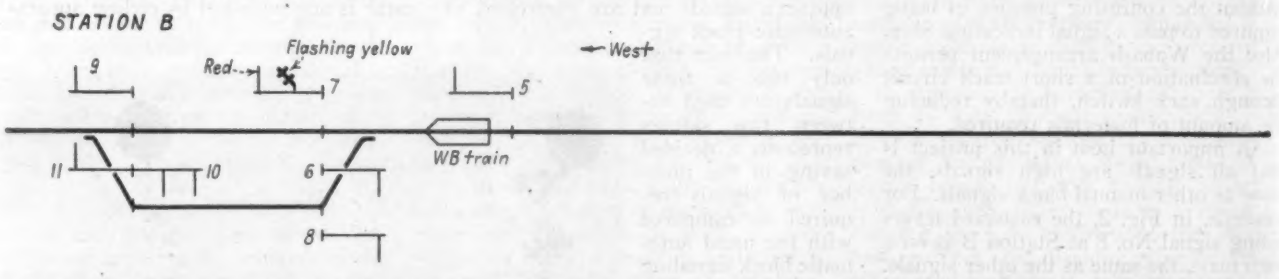


Fig. 5—As the Westbound Train Approaches Station B, the Flashing-Yellow Aspect on Station-Entering Signal No. 7 Authorizes the Train to Pull on Down on the Main Track and Stop Short of Signal No. 9 for a Meet with the Train Which Is to Take Siding

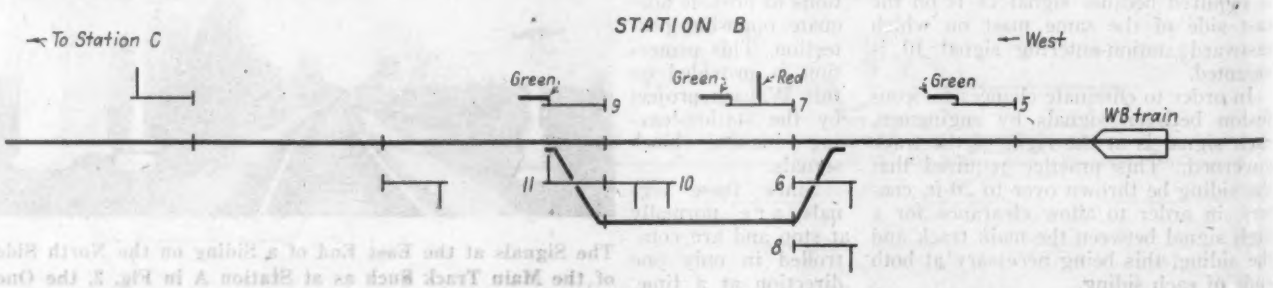


Fig. 6—If Westward Train Is to Be Directed to Proceed at Speed on Main Track Through Station B, and Continue to Station C, Signal No. 5 Displays Green, Signal No. 7 Green-Over-Red and Signal No. 9 Green

Tie Renewals up 5.8 Per Cent in 1944

Data reported by A. R. E. A. show increased renewals compared with previous year, despite decrease in the production and continued severe shortage of labor

DESPITE the difficulties that continue to influence the procurement of crossties and the continuing shortage of maintenance labor with which the railways are still contending, 73 Class I roads in the United States and Canada inserted more ties per mile of maintained track in 1944 than they did in 1943, while only 57 roads inserted fewer ties and 4 inserted the same number as in 1943. Of these 134 roads, 131 are in the United States and 3 are in Canada.

As a net result of these operations, roads in the United States inserted a total of 47,842,956 new wooden crossties, 208,780 second-hand ties and 2,066 substitute ties, a grand total of 48,054,802 ties in replacement in 1944. This compares with 45,159,177 new wooden crossties, 280,245 second-hand ties and 90 substitute ties, or a total of 45,439,512 ties of all classes inserted in 1943. It represents an increase of 2,615,290 ties, or 5.8 per cent. The three Canadian roads inserted 7,638,324 new wooden crossties in 1944, compared with 7,645,067 in 1943, a decrease of 6,743 ties.

These and other important comparisons can be drawn from the tabulation of statistics relating to tie renewals compiled for the Committee on Ties of the American Railway Engineering Association by the Bureau of Railway Economics, from reports made to the Interstate Commerce Commission by the roads of the United States, and direct to the Bureau by the Canadian roads. These statistics which were reported to the association by the Tie committee, are reproduced here in condensed form.

Renewals Per Mile

With the few exceptions to be noted, the number of ties renewed per mile of track by individual roads did not differ widely from the number replaced in 1943. This is attested by the fact that the average for all of the roads in the United States was only eight more than in 1943 and five more than the five-year average ending with 1944.

Among the noteworthy changes were the Delaware & Hudson, from 109 to 152; the Lehigh Valley, from 74 to 109; the New York, Chicago & St. Louis, from 132 to 176; the Reading, from 104 to 145; the Illinois Central, from 180 to 217; the New Orleans & Northeastern, from 147 to 207; the Spokane, Portland & Seattle, from 225 to 492; the Chicago, Rock Island & Pacific, from 117 to 165; the Denver & Salt Lake, from 125 to 229; the Western Pacific, from 164 to 293; the Louisville & Nashville, from 189 to 130; the Duluth, Missabe & Iron Range, from 127 to 89; the Kansas City Southern, from 409 to 251; and the Louisiana & Arkansas, from 718 to 448. In each of the foregoing comparisons the 1943 figures are given first.

Comparisons by regions are of equal interest, these being the New England region, from 74 to 84; the Great Lakes region, from 118 to 131; the Central Eastern region, from 121 to 127; the Pocahontas region, from 93 to 90; the Southern region, from 186 to 187; the Northwestern region, from 127 to 144; the Central Western region, from 125 to 139; and the Southwestern region, from 179 to 169. For the United States as a whole, the comparison is from 136 to 144.

More Treated Tie Users

The five-year average by regions is, New England, 89; Great Lakes, 119; Central Eastern, 117; Pocahontas, 85; Southern, 180; Northwestern, 147; Central Western, 131; Southwestern, 164; and the United States as a whole, 139.

Further analysis of these statistics discloses that in 1944 treated ties were used exclusively on 71 roads, compared with 50 roads in 1943, and that only four roads, the same number as in 1943, did not use any treated ties in 1944. On 33 other roads more than 80 per cent of the ties applied in replacement were given preservative treatment; on 9 roads the percentage of treated ties ranged from 60 to 80 per cent; on 9 roads from 40 to 60 per cent; on 2 roads from 20 to 40 per cent, and on only 6 roads was the percentage of treated ties less than 20 per cent.

Relatively, the number of treated ties increased again this year, since they represented 93.4 per cent of all ties applied in 1944, compared with 91 per cent in 1943, with 89.6 per cent in 1942 and with 87.5 per cent in 1941. This represents an increase of 2.4 per cent in the ratio of treated to untreated ties for the year.

Numerically, there was an increase of 6,479,879 treated ties, from 41,363,077 inserted in 1943 to 47,842,956 inserted in 1944 by the railways of the United States, an increase of 15.6 per cent. Also, there was an accompanying decrease of 860,263, or 22.7 per cent, in the number of untreated ties applied by these same roads, from 3,796,100 applied in 1943 to 2,935,837 applied in

Ninety-Three and Four-Tenths Per Cent of All Ties Installed in Renewals in 1944 Were Treated

1944. There was also a large decrease in the combined number of second-hand and substitute ties applied in 1944. Compared with the previous year the reduction was from 280,335 in 1943 to 211,846 in 1944, a difference of 62,489.

The tabulation also contains a column showing the five-year average tie renewals for each road and each region, which reveals that the roads having the lowest five-year average per mile of maintained track were the Denver & Rio Grande Western, with an average of 40 ties; the Rutland with 45; the Central of Vermont, with 52; the Norfolk & Western with 53; the Lehigh & New England and the Cincinnati, New Orleans & Texas Pacific, with 55 each; the New York, Susquehanna & Western, with 58; the Detroit, Toledo & Ironton, with 61; the New York, New Haven & Hartford, with 67; the Lehigh Valley, with 73; the Delaware, Lackawanna & Western, with 76; the Chicago, Indianapolis & Louisville and the Burlington-Rock Island, with 78 each; the Utah, with 82; the Erie and the Montour, with 84 each; the Chesapeake & Ohio and the Pennsylvania-Reading Seashore Lines, with 89 each; the Bessemer & Lake Erie, with 90; the Atchison, Topeka & Santa Fe and the Fort Worth & Denver City, with 91 each; the Ann Arbor, the Lehigh & Hudson River and the Illinois Terminal, with 92 each; the Boston & Maine, with 93; the Central of New Jersey and the Reading, with 94 each; and the Alabama Great Southern, with 96. The five-year average for the Canadian National was 190; for the Canadian Pacific, 142; and for the Temiskaming & Northern Ontario, 234.

Two measures of tie-renewal policies are shown in the last two columns of the accompanying table. One of these gives the cost of tie renewals per mile of maintained tracks; and the final column gives the cost of wooden crossties per thousand equated gross-ton miles. In this connection, considerable caution should be exercised in comparing the cost of ties on one railway with that on another, because of wide variations in conditions that exist at present in different sections of the country.

The data in this table cover a total of 331,261.85 miles of maintained tracks, compared with 331,246.98 miles in 1943, an increase of 14.87 miles.

Statistics of Crosstie Renewals on Leading Railroads in the United States and Canada for the Calendar Year Ending December 31, 1944

Road	Miles of maintained track occupied by crossties	Total number of new wooden crossties laid in replacement in 1944	Number of wooden crosstie renewals per mile of maintained track		Per cent of wooden crosstie renewals to all ties in tracks		New wooden ties untreated (U)		New wooden ties treated (T)		Estimated total crossties in all maintained tracks	Cost of new wooden crosstie renewals per mile of maintained track	Cost of new wooden crosstie renewals per thousand equated gross ton-miles (cents)
			1944	5 year average	1944	5 year average	Per cent applied	Average cost††	Per cent applied	Average cost††			
New England Region:													
Bang. & Aroos.	822.22	89,660	109	140	3.8	4.9	57.2	$1.05	42.8	$2.78	2,361,785	$195	8.93
B. & M.	2,935.40	210,235	72	93	2.4	3.1	0.1	1.08	99.9	2.20	8,659,400	157	2.36
C. N. R. (Lines in N. E.)	248.62	27,876	112	131	3.6	4.2	7.4	0.86	92.6	1.61	766,873	174	6.45
C. P. R. (Lines in Me.)	214.93	13,631	63	59	2.0	1.9	24.3	1.29	75.7	1.84	667,505	108	0.97
C. P. R. (Lines in Vt.)	124.93	14,549	116	88	3.9	2.9	...†	0.90	100.0	1.98	376,243	230	4.47
C. Vt.	495.02	11,514	23	52	0.8	1.8			100.0	1.70	1,465,200	40	0.69
Me. Cent.	1,228.43	154,416	126	140	4.1	4.6	40.2	1.20	59.8	2.47	3,725,500	246	6.71
N. Y. Connecting	25.90	3,288	127	240	4.0	7.6	...	...	100.0	2.88	81,641	365	1.99
N. Y. N. H. & H.	3,821.90	331,898	87	67	2.8	2.2	...	...	100.0	2.26	11,983,301	196	2.31
Rutland	487.27	21,855	45	45	1.4	1.5			100.0	1.81	1,514,200	81	2.75
Total	10,404.62	878,922	84	89	2.8	2.9	13.5	1.13	86.5	2.24	31,601,648	177	2.75
Great Lakes Region:													
Ann Arbor	402.37	37,987	94	92	3.1	3.1	...	...	100.0	2.10	1,220,402	198	4.69
Camb. & Ind.	56.32	11,897	211	289	7.4	10.5	...	...	100.0	2.67	161,800	563	18.04
D. & H.	1,391.26	211,569	152	141	4.9	4.6	...†	1.28	99.8*	2.55	4,289,274	387	3.16
D. L. & W.	2,237.64	181,997	81	76	2.8	2.6			94.7*	2.34	6,489,406	190	2.07
Det. & Mack.	277.70	28,872	104	106	3.5	3.5	88.7	0.88	11.3	2.05	828,425	106	11.98
D. & T. Shore Line	151.16	6,532	43	101	1.4	3.3	...	...	99.9*	2.22	455,987	96	2.06
Erie	4,732.42	417,429	88	84	3.0	2.8	...	...	100.0	2.47	13,975,038	218	1.97
G. T. W.	1,896.55	277,275	146	158	4.6	5.0	...	...	100.0	2.17	6,003,326	317	5.66
L. & H. R.	113.18	10,394	92	92	3.4	3.4	...	...	100.0	2.98	304,247	273	2.86
L. & N. E.	258.35	12,379	48	55	1.6	1.8	...	...	100.0	2.52	781,510	121	2.57
L. V.	2,654.47	290,345	109	73	3.7	2.4	...	...	100.0	2.43	7,880,705	266	2.48
Monongahela	237.98	30,869	130	160	4.4	5.5	...	...	100.0	2.41	694,750	313	5.61
Montour	72.39	5,844	81	84	2.8	2.9	95.9	2.11	4.1	1.84	208,494	169	3.17
N. Y. C.	20,976.96	3,143,748	150	127	4.9	4.1	...†	1.60	99.3*	2.35	64,661,105	352	3.34
N. Y. C. & St. L.	2,528.32	445,355	176	141	5.6	4.5	...	...	100.0	2.43	7,964,195	427	3.26
N. Y. O. & W.	815.91	4,762	6	5	0.2	0.2	...	...	20.6*	2.33	2,345,151	14	0.33
N. Y. S. & W.	214.70	9,870	46	58	1.6	2.0	...	...	100.0	1.69	625,408	78	3.85
P. M.	2,582.79	393,583	152	167	5.1	5.5	...	...	100.0	1.95	7,700,161	297	4.52
P. & L. E.	868.94	87,380	101	106	3.4	3.5	...	...	100.0	2.38	2,603,684	239	3.68
P. & S.	115.32	23,812	206	199	7.3	7.1	...†	1.42	97.0*	2.84	326,660	586	19.80
P. & W. Va.	182.60	22,454	123	230	4.0	7.5			100.0	2.75	555,293	338	4.30
P. S. & N.	219.21	23,603	108	128	3.7	4.4	80.2	1.21	19.8	2.34	643,828	154	10.33
Wabash	3,160.97	372,812	118	136	3.8	4.4			100.0	2.00	9,851,453	236	2.44
Total	46,147.51	6,050,768	131	119	4.3	3.9	1.1	1.08	98.3*	2.32	140,570,302	303	3.11
Central Eastern Region:													
A. C. & Y.	214.32	46,696	218	234	7.6	8.1	100.0	1.82	...	...	616,809	396	9.05
B. & O.	10,328.74	1,974,438	191	162	6.7	5.7	...	...	100.0	2.21	29,456,707	422	3.76
B. & L. E.	487.62	19,479	40	90	1.3	2.9	...	...	100.0	2.85	1,516,660	114	1.09
C. of N. J.	1,426.90	148,766	104	94	3.7	3.3	...	...	100.0	2.40	4,010,976	250	2.89
C. & E. I.	1,330.96	170,088	128	116	4.1	3.8	...	...	100.0	1.72	4,127,174	220	2.36
C. & I. M.	168.33	25,188	150	115	5.0	3.8	...		100.0	2.88	507,062	431	11.80
C. I. & L.	740.27	49,161	66	78	2.1	2.5	...	1.26	100.0	1.59	2,298,318	105	2.20
D. T. & I.	600.29	28,500	47	61	1.6	2.1	9.8	0.44	90.2	1.75	1,728,835	77	2.34
E. J. & E.	865.79	126,644	146	152	4.7	4.9			97.8*	1.98	2,669,995	290	5.76
Ill. Term.	628.70	54,839	87	92	2.9	3.1	6.8	1.25	91.8*	1.59	1,886,100	137	5.47
Long Island	797.41	167,631	210	116	7.4	4.1	...	...	100.0	2.87	2,274,517	604	9.92
Mo.-Ill.	213.14	46,678	219	232	7.0	7.4	...	...	100.0	1.88	668,000	411	19.35
Penna.	21,370.17	2,161,999	101	100	3.5	3.5	...	...	100.0	2.30	60,991,156	233	1.77
P.-R. Seashore Lines	635.40	52,471	83	89	3.0	3.3	...	...	100.0	2.62	1,724,719	216	6.76
Reading	2,927.90	425,713	145	94	4.7	3.3	...	...	100.0	2.37	9,088,329	345	4.01
S. I. Rap. Trans.	79.98	4,905	61	68	2.3	2.5	...	...	100.0	2.52	217,846	155	6.90
W. M.	1,145.42	124,825	109	130	3.8	4.5	3.3	1.52	96.7	2.30	3,301,149	248	2.91
W. & L. E.	839.65	78,959	94	165	3.1	5.5	†	1.40	98.3*	2.28	2,526,840	214	3.24
Total	44,800.99	5,706,980	127	117	4.4	4.1	1.0	1.69	98.9*	2.26	129,611,192	287	2.63
Pocahontas Region:													
C. & O.	5,035.42	503,058	100	89	3.2	2.9	...	...	100.0	2.01	15,484,935	200	1.36
N. & W.	4,269.24	283,063	66	53	2.1	1.7	...	...	98.6*	1.86	13,234,644	124	0.96
R. F. & P.	398.63	72,820	183	325	6.4	11.4	...	...	99.9*	2.19	1,140,000	402	1.79
Va.	904.43	97,190	107	112	3.5	3.6	...	...	98.7*	1.73	2,781,620	186	1.74
Total	10,607.72	956,131	90	85	2.9	2.7	...	...	99.4*	1.95	32,641,199	176	1.27

Statistics of Crosstie Renewals on Leading Railroads in the United States and Canada for the Calendar Year Ending December 31, 1944 (Continued)

Road	Miles of maintained track occupied by crossties	Total number of new wooden crossties laid in replacement in 1944	Number of wooden crosstie renewals per mile of maintained track		Per cent of wooden crosstie renewals to all ties in tracks		New wooden ties untreated (U)		New wooden ties treated (T)		Estimated total crossties in all maintained tracks	Cost of new wooden crosstie renewals per mile of maintained track	Cost of new wooden crosstie renewals per thousand equated gross ton-miles (cents)
			1944	5 year average	1944	5 year average	Per cent applied	Average cost††	Per cent applied	Average cost††			
Southern Region:													
A. G. S.	552.44	72,678	132	96	4.4	3.2	1.9	$1.70	98.1	$2.41	1,667,140	316	2.40
A. & W. P.	139.91	28,145	201	211	6.5	6.8	42.5	1.83	57.5	2.17	431,859	408	4.10
A. B. & C.	791.13	167,943	212	160	7.3	5.5	12.3	1.41	87.7	2.10	2,288,320	428	12.34
A. C. L.	6,626.56	1,180,427	178	149	6.1	5.1	0.6	1.40	99.4	1.99	19,397,603	354	5.10
C. of Ga.	2,257.33	330,951	147	155	5.0	5.3	0.3	1.58	99.7	1.64	6,678,438	241	4.51
C. & W. C.	425.51	77,510	182	159	6.3	5.5	19.8	1.72	80.2	2.06	1,229,973	364	11.42
C. N. O. & T. P.	771.36	43,282	56	55	1.9	1.8	...†	1.31	100.0	2.55	2,274,700	143	0.92
Clinchfield	397.20	51,781	130	194	4.3	6.4	56.1	1.31	43.9	2.01	1,207,472	211	1.85
Col. & Green	204.03	34,063	167	157	5.3	5.0	2.2	1.04	97.8	2.09	646,367	345	23.48
F. E. C.	1,252.64	228,845	183	174	6.4	6.1	15.9	1.61	84.1	2.39	3,597,443	414	6.20
Georgia	433.93	91,944	212	221	6.9	7.2	80.2	1.85	19.8	2.33	1,332,301	412	6.39
G. & F.	456.33	144,796	317	263	11.8	9.8	100.0	1.04	...	...	1,232,091	331	21.84
G. S. & F.	463.85	52,588	113	127	3.6	4.1	92.9	1.54	7.1	2.19	1,459,954	180	4.10
G. & S. I.	303.04	72,994	241	234	7.8	7.6	...	...	100.0	1.77	937,763	425	16.08
G. M. & O.	2,027.38	595,125	294	309	9.3	9.7	6.1	1.32	93.6*	2.08	6,422,738	596	10.90
I. C.	7,498.80	1,629,987	217	194	7.1	6.4	0.1	1.65	99.8*	1.87	22,865,429	407	4.19
L. & N.	6,705.47	869,385	130	149	4.5	5.2	0.1	0.89	99.9	1.90	19,199,627	246	2.71
Miss. Cent.	176.87	21,618	122	217	3.9	6.9	...†	0.95	100.0	2.07	557,943	252	9.77
N. C. & St. L.	1,469.60	306,082	208	153	7.6	5.6	...†	1.11	100.0	2.04	4,022,295	425	5.49
N. O. & N. E.	289.71	60,095	207	134	7.1	4.4	2.2	1.47	97.8	2.52	845,470	519	3.75
Nor. Sou.	853.98	232,632	272	322	9.3	11.1	62.6	1.19	37.4	2.32	2,493,451	439	17.75
S. A. L.	5,302.49	1,099,293	207	190	6.9	6.3	11.3	1.62	88.7	2.13	16,045,808	430	5.58
Southern	8,608.37	1,321,503	154	172	5.0	5.5	7.4	1.62	92.6	2.33	26,668,088	350	4.42
Tenn. Cent.	342.70	51,913	151	247	5.0	8.2	35.9	1.23	64.1	2.26	1,037,817	287	8.69
W. Ry. of Ala.	183.63	45,949	250	241	8.2	7.9	77.0	1.84	23.0	2.18	559,557	480	5.95
Y. & M. V.	2,028.14	665,806	328	262	10.8	8.6	...†	1.27	100.0	1.90	6,191,283	625	13.41
Total	50,562.40	9,477,335	187	180	6.3	6.0	9.0	1.44	90.9*	2.04	151,290,930	372	4.87
Northwestern Region:													
C. & N. W.	11,227.30	1,210,509	108	118	3.6	4.0	5.0	0.91	95.0	1.82	33,256,250	192	4.20
C. G. W.	1,877.02	337,430	180	152	6.1	5.1	37.7	1.49	62.3	2.14	5,566,894	341	5.60
C. M. St. P. & P.	13,564.69	2,188,150	161	164	5.2	5.3	17.6	0.92	82.4	1.90	41,956,697	279	5.31
C. St. P. M. & O.	2,152.34	285,478	133	152	4.5	5.1	1.5	1.07	98.5	1.95	6,381,447	256	6.69
D. M. & I.	1,093.01	97,226	89	112	3.0	3.7	7.7	1.23	92.1*	2.15	3,256,052	185	2.73
D. S. S. & A.	519.79	76,700	147	175	5.0	6.1	39.2	1.01	60.8	1.85	1,539,666	224	9.69
D. W. & P.	207.00	70,734	342	334	11.6	11.4	19.1	1.33	80.9	2.16	608,178	682	14.56
G. N.	10,233.16	1,731,584	169	154	5.5	5.0	1.0	0.89	97.7*	1.96	31,603,897	330	5.31
G. B. & W.	283.05	110,830	392	328	13.6	11.4	32.5	1.25	67.5	2.40	815,184	793	26.98
L. S. & I.	233.89	31,419	134	151	4.5	5.0	58.0	1.17	42.0	2.18	701,670	213	25.00
M. & St. L.	1,563.25	211,646	135	183	4.5	6.1	31.6	1.20	68.4	1.84	4,721,787	221	8.52
M. St. P. & S. S. M.	4,888.73	411,782	84	114	2.9	3.9	18.2	1.11	81.8	1.88	14,418,132	147	4.41
N. P.	9,178.18	978,212	107	127	3.7	4.4	1.5	1.07	98.5	1.63	26,648,694	172	2.93
Spokane Int.	177.22	77,160	435	374	15.0	12.9	100.0	1.16	...	...	515,070	506	23.66
S. P. & S.	1,125.38	553,684	492	294	16.2	9.9	3.1	0.81	96.9	1.93	3,425,922	932	14.01
Total	58,324.01	8,372,544	144	147	4.8	4.9	11.3	1.08	88.4*	1.89	175,415,540	258	5.03
Central Western Region:													
Alton	1,507.48	273,113	181	206	6.0	6.8	45.3	1.46	54.0*	2.46	4,551,175	363	5.14
A. T. & S. F.	19,022.97	1,476,269	78	91	2.6	3.0	...†	1.96	100.0	1.50	57,772,760	116	1.27
C. B. & Q.	11,972.12	2,184,373	182	176	5.9	5.7	...	...	97.4*	1.84	36,969,906	336	5.44
C. R. I. & P.	9,583.63	1,580,059	165	121	5.5	4.0	...	...	100.0	2.01	28,645,417	331	5.28
C. & S.	826.33	81,823	99	102	3.3	3.4	...	...	96.7*	1.90	2,478,990	188	2.81
C. & W.	108.35	7,472	69		2.4		...	...	100.0	2.82	312,246	195	71.35
D. & R. G. W.	3,129.88	125,038	40	40	1.3	1.3	1.5	0.69	70.8*	1.88	9,756,147	74	1.03
D. & S. L.	320.24	73,377	229	170	7.6	5.6	...	...	100.0	2.24	969,278	691	21.81
F. W. & D. C.	946.51	111,134	117	91	2.9	2.7	...	...	93.1*	1.99	3,846,230	174	3.23
Northwestern Pac.	419.04	124,463	297	220	10.2	7.6	95.6	1.73	4.4	1.92	1,215,844	516	18.94
S. P.	11,872.41	1,776,731	150	115	4.8	3.7	10.9	1.21	89.1	1.77	36,798,581	256	2.17
T. P. & W.	278.00	16,848	61	130	1.9	4.1	...	...	100.0	1.77	880,704	107	2.45
U. P.	13,118.98	2,102,676	160	173	5.7	6.1	0.5	1.20	99.5	1.54	37,066,198	246	2.13
Utah	71.49	3,725	52	82	1.8	2.9	16.6	1.24	64.2*	2.62	203,042	122	2.68
W. P.	1,514.74	443,682	293	255	9.8	8.6	65.0	1.42	34.9*	2.41	4,524,990	517	4.64
Total	74,692.17	10,380,783	139	131	4.6	4.4	7.0	1.42	91.8*	1.76	225,991,508	242	2.72
Southwestern Region:													
B. S. L. & W.	148.15	37,758	255	162	8.6	5.4	...	...	100.0	1.90	441,000	484	2.65
B.-R. I.	177.77	16,961	95	78	3.0	2.5	...	...	100.0	1.22	556,420	117	2.40
I.-G. N.	1,420.56	144,637	102	115	3.4	3.8	...	...	100.0	1.86	4,257,400	190	3.01
K. C. S.	1,256.70	315,318	251	303	7.9	9.5	...†	1.04	100.0	1.75	3,979,654	439	4.21
K. O. & G.	352.96	21,306	60	48	2.0	1.6	...	...	100.0	1.72	1,044,761	104	3.09
L. & A.	931.98	417,858	448	428	13.7	13.2	...†	1.1'	100.0	1.86	3,042,969	832	17.56
M. V.	359.53	24,285	68	64	2.3	2.2	...†	0.20	100.0	1.46	1,064,209	99	8.48
M. & A.	358.60	137,696	384	345	12.3	11.1	27.2	1.11	72.8	1.63	1,115,442	573	30.99
M.-K.-T.	3,910.82	1,271,802	325	236	10.3	7.5	...	...	100.0	1.94	12,304,600	630	8.91
M. P.	8,920.55	845,687	95	136	3.1	4.4	2.6	1.09	97.4	1.70	27,527,075	160	1.85
N. O. T. & M.	224.73	37,820	168	177	5.5	5.8	...	...	76.6*	2.00	687,500	336	3.85
O. C.-A. A.	138.89	39,821	287	215	10.0	7.5	5.2	0.17	94.8	0.90	400,003	248	19.80
St. L. B. & M.	757.55	141,096	186	152	6.2	5.0	...†	0.82	97.3*	1.90	2,292,300	354	5.39
St. L.-S. F.	6,234.67	823,099	132	124	4.2	3.9	9.3	1.14	90.7	1.62	19,624,345	208	3.46
St. L. S. F. & T.	153.66	13,944	91	129	2.9	4.1	9.2	1.15	90.8	1.57	480,058	139	3.02
St. L. Sw.	1,865.32	383,864	206	176	6.5	5.5	...	...	100.0	1.85	5,867,486	380	3.65
S. A. U. & G.	359.77	61,819	172	119	6.0	4.1	...	...	94.5*	1.13	1,037,600	194	8.17
T. & N. O.	5,563.65	710,555	128	134	4.7	4.9	...†	0.92	100.0	1.57	15,172,358	201	2.85
T. & P.	2,383.54	552,997	232	198	7.9	6.7	...	...	100.0	1.77	6,963,500	411	4.52
Tex.-Mex.	203.03	21,170	104	146	3.3	4.6	3.0	0.25	97.0	1.84	643,199	187	17.56
Total	35,722.43	6,019,493	169	164	5.5	5.4	2.4	1.10	97.4*	1.75	108,501,879	293	3.97
Grand Total—U. S.	331,261.85	47,842,956	144	139	4.8	4.6	6.1	1.28	93.4*	1.98	995,624,198	280	3.36
Canadian Roads:													
C. N.	26,877.00	4,442,270	165	190	5.6	6.5	48.0	1.03	52.0	1.58	78,784,801	217	5.07
C. P.	21,080.00	3,066,137	145	142	5.1	5.0	53.6	1.10	46.4	1.80	60,708,405	207	4.34
T. & N. O.	679.70	129,917	191	234	6.6	8.0	100.0	0.90			1,970,550	172	6.28

* Owing to the fact that the total number of ties inserted on some roads included second-hand ties, ties other than wood and tie blocks, the percentage of treated and untreated ties do not total 100 per cent in all cases.

† Less than 0.1 per cent.

†† These are storekeepers' average costs for the ties charged out and used. They are not the actual costs or the price paid for ties purchased during the period.

How to Retain Heavier Loads per Car

An examination of the practicability of offering rate and other inducements to retain in peace the economies enforced by war—I. C. C. attitude is explored

Part II*

By G. LLOYD WILSON

Professor of Transportation & Public Utilities, University of Pennsylvania

WITH further reference to the supplemental report in the *Container Case,* 182 I. C. C. 853, the commission found the rates not to be unlawful, stating: "Our disapproval of alternative minima at different rates has generally been on the ground that thereby unjust discrimination would result against the small shipper" . . . and that such rates were unlawful, "except upon a record which establishes that charges so determined are warranted by differences in the cost and quality of the service."[15]

In *Rate Structure Investigation,* I. C. C. Docket No. 17000, Part 5, *Furniture,* the Commission found not to be justified various carload rate formulas proposed by different furniture manufacturers and distributors which embodied graded carload minimum weights and rates, scaled downward as the carload minimum weights were graded upward —a special furniture mixture rule to be used in conjunction with the formulas, and a proposed carload minimum weight of 8,000 lb. It stated that "alternative bases" (of rates and carload minimum weights) "are generally undesirable."[16]

The Commission was asked in readjusting rates in Southwestern Territory to prescribe two sets of alternative rates on iron and steel articles based upon alternative carload minimum weights, the lower rates to be subject to a materially higher carload minimum weight than the higher rates.

The Commission declined to establish the dual rates. In *Armour and Company v. A. T. & S. F. R. Co., et al.,* it stated that "alternative rates for heavy-loading freight give an advantage, and perhaps an undue advantage, to those who can ship and receive exceptionally large consignments over those who cannot."[17]

Alternatives Warranted

In the *Consolidated Southwestern Cases,* the Commission reiterated the position taken with respect to the lawfulness of alternative rates at different carload minimum weights, that such adjustments "which favor larger shippers as against the smaller are not as a rule desirable."[18]

As has been suggested above, the Commission has, in several cases, ordered the establishment of different rates on different carload minimum weights when such bases were found to be justified by the circumstances surrounding the transportation of the goods. In *Aluminum Goods Manufacturing Co. et al. v. A. & V. R. Co. et al.* the complainant shipper sought a rate based upon a carload minimum weight of 14,000 lb. which exceeded by 2,000 lb. per car the average of their shipments in standard cars of 26 ft. in length. The intervener suggested three alternative ratings and three carload minimum weights: second class with 10,000-lb. carload minimum weight; third class with 14,000-lb. minimum; and fourth class subject to a carload minimum of 20,000 lb.

The Commission, by Division 4, prescribed a rating of second class subject to 12,000 lb. carload minimum to be used alternatively with a rating of third class in Official and Southern Territories and fourth class in Western Territory, subject to a carload minimum weight of 20,000 lb.[19] The Commission in prescribing the dual rates and minima explained that it had refrained from doing so when requested in other cases, but went on to say that because of the complexities of differentiating light and heavy aluminum ware in this case: "We are of opinion that approval of a single carload rating on the aluminum ware here under consideration would amount to a denial of substantial justice."[20]

In the supplemental *Container Service Case,* the Commission, in the absence of opposition to alternative rates and carload minimum rates, prescribed them for application after being convinced that the different rates were justified by differences in costs and differences in the quality of the service.[21]

Following the scale of rates prescribed in the *Consolidated Southwestern Cases* on scrap iron and steel of 17½ per cent of the first class rates, 50,000-lb. carload minimum weight, the Commission, by Division 5, in the *Waste Dealers Association Case,* found these rates based on 13½ per cent of first class, subject to a carload minimum weight of 70,000 lb. to be applied alternatively. Reparation was denied.[22]

In 1930, on further hearing on the *Waste Material Dealers Association Case,* modified the rates on scrap iron and steel in carload lots subject to carload minimum of 50,000 lb. between points in the Southwest unreasonable to the extent that they exceeded 15 per cent of the first class rates on the Southwestern class rate scale, and the alternative rates based upon a 75,000-lb. carload minimum to be unreasonable to the extent that they exceeded 12½ per cent of the corresponding first class rates. The Commission affirmed the finding of Division 5 with respect to the desirability and lawfulness of the alternative rates and carload minimum weights between these points and extended it to cover the Southwest Territory.

Processing Affects Rate

It said: "The evidence is clear that the movement to the concentration points and that beyond are quite different in character. The former consists of scrap which cannot be loaded in excess of 50,000 lb., whereas the latter consists of processed scrap which has been graded and can be loaded in excess of 70,000 lb. From a transportation standpoint they are different commodities. The difference in loading, and the economic desirability of encouraging the movement of scrap by establishing a lower rate and higher minimum from the concentration point than would be justified from the country station to the concentration point, are sufficient reasons for the establishment of the alternative basis." It fixed the carload minimum weight for the heavier-loading of "industrial scrap" or "processed scrap" at 75,000 lb. and for the lighter-loading "country scrap" at 50,000 lb.[23] An order was entered modifying the prior order in the *Waste Material Dealers Case* and in the *Consolidated Southwestern Cases.*[24]

In 1938 the Commission held further

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* This is the concluding part of an article, Part I of which appeared in last week's issue, page 95.

[15] (182 ICC 653, 662) 1932.

[16] I. C. C. Docket No. 17000, Part 5—*Furniture.* (177 ICC 5, 99), 1931.

[17] *Armour & Co. v. A. T. & S. F. R. Co. et al,* (183 ICC 245), 1932 and (190 ICC 379, 380), 1932.

[18] I. C. C. Docket No. 25382, *Consolidated Southwestern Cases,* (194 ICC 379, 386), 1933.

[19] *Aluminum Goods Mfg. Co. et al. v. A. & V. R. Co., et al.* (921 ICC 346), 1924.

[20] (92 ICC 346, 352), 1924.

[21] (182 ICC 653), 1932.

[22] *Consolidated Southwestern Cases,* (123 ICC 203), 1927; and *Waste Material Dealers Assn. of Arkansas v. C. R. I. & P. R. Co., et al.* (152 ICC 41), 1929.

[23] *Waste Material Dealers Association of Arkansas v. C. R. I. & P. R. Co., et al.* (164 ICC 587), 1930.

[24] (123 ICC 203), 1927; and (152 ICC 41), 1929.

hearings in the *Waste Material Dealers Case* and affirmed its finding with respect to the dual rates and minimum weights despite evidence showing that "country scrap" was being loaded in larger lots and only a small percentage of such shipments were made in shipments of less than 50,000 lb. The carriers contended that in some cases the heavy loading of country scrap, in order to obtain the advantage of the lower rate basis, resulted in improper loading and overloading. The complainants contended, however, that the admitted improper loading was due to the unprecedented demand for scrap.

The Commission defended the prescription of alternative rates and minimum weights on the grounds of the propriety and necessity of such rates in this territory and their existence on scrap in other territories. It said, in part: "No sweeping generalization in regard to the propriety of alternative rates and minima can be made. In some cases we have recognized that there are certain objections to this method of rate publication . . . while in other cases to meet the needs of particular traffic we have approved or prescribed alternative rates or minima. . . . Alternative rates are in effect in the Southwest and elsewhere on numerous commodities, and on scrap in other parts of the country, except possibly Official Territory. The record clearly shows that rates on scrap on this basis are proper and necessary in the Territory here considered."[25]

Alternative rates were prescribed by the Commission in *Baldwin and Burke Safe Company et al. v. A. T. & S. F. R. Co. et al.* decided in 1933. In this case, the Commission found the prevailing rates based upon a carload minimum weight of 24,000 lb. on iron or steel safes or vaults or parts from points in Ohio and Indiana to points in California not to be unreasonable to the extent that they exceeded the charges based upon lower rates subject to a carload minimum weight of 60,000 lb. The carriers in this case conceded that the commodities could be loaded to about 100,000 lb. per car.

Rate Spread

The amount of the spread is indicated by the present and prescribed rates to the California points.

From	Carload Rate Subject to 24,000-lb. Minimum Weight	Carload Rate Based Upon 60,000-lb. Minimum Weight
Lafayette, Ind..	$1.91	$1.23
Hamilton, Ohio.	$1.91	$1.23
Hillsboro, Ohio .	$2.00	$1.30
Cleveland, Ohio.	$2.00	$1.30
York, Pa.	$2.18	$1.45

The Commission observed: "Under circumstances where heavier loading is possible, shippers should be encouraged to load up to the full capacity of the cars by maintenance of rates and minimum weights based upon such loading."[26]

In *Blythville Chamber of Commerce v. A. & R. R. Co. et al.* the Commission found just and reasonable, generally, rates on cotton, carloads, from the Southwest and Mississippi Valley to Southeastern and Official Territory destinations on a basis of a 50,000-lb carload minimum weight upon a level of 75 per cent of the any-quantity rates, and the rates on a 35,000-lb. carload minimum unduly preferential and unduly prejudicial to those shipping under the 50,000-lb. carload minimum to the extent that the rates upon the 35,000-lb. carload minimum were less than 10 cents per 100 lb. over the rates applicable to the 50,000-lb. carload minimum.[27]

Justification of Suspensions

The Commission permitted to go into effect after protest and suspension proceedings two scales of single-line and joint-line rates on lime in Southern Territory in *Lime Between Southern Points* in 1927. The rates(based upon a 30,000-lb. carload minimum, permitted to go into effect were generally higher than the prevailing rates, while those upon a carload minimum weight of 50,000 lb. were, in most instances, reductions below the prevailing rates. The Commission found the proposed rates to have been justified and vacated the suspension order.[28]

In 1933, in *Lime From, To and Between Points in the Southwest,* another investigation and suspension proceeding, the Commission found proposed rates on lime not justified and ordered the suspended schedules cancelled but without prejudice to the filing of rates on bases found by the Commission in this proceeding to be reasonable. The bases found by the Commission to be reasonable maximum rates were two sets of rates, one based upon a carload minimum of 30,000 lb., and the other on a level of 80 per cent of the higher rates, subject to a carload minimum weight of 50,000 lb.[29]

The Commission, in discussing dual rates and carload minimum weights, said in part: "There are two lines of trade in the marketing of lime; one, the local dealer or jobber who has to have small-lot shipments, and the other the industrial consumer who not only needs but usually insists upon, shipments in large carloads. A dealer retailing lime in small quantities within local territory cares little what rates may be paid by the industrial lime consumer. Neither has anything in common. Each is entitled to rates that are fairly responsive to the practical needs of commerce and otherwise in conformity with the settled principles of rate construction."[30]

In *Rates and Minimum Weights on Metal Containers,* the Commission approved a triple basis of rates and carload minimum weights on metal containers in the Southwest: Column 55 rates subject to a carload minimum of 14,000 lb.; Column 50 rates with a 20,000-lb. carload minimum; and Column 40 rates coupled with a load minimum weight of 30,000 lb.[31] Here the highest carload minimum weight was 214 per cent of the lowest rate subject to the highest carload minimum weight; and the lowest rate was 72.7 per cent of the highest rate subject to the lowest carload minimum weight.

The Commission stated in this case: "With two or more alternative ratings available, each lower rating being subject to a higher minimum weight, shippers will have an incentive to load cars as heavily as possible in order to obtain a reduction in the hundredweight rates; and thus the containers will be separated into rate groups corresponding with their loading possibilities as effectually as if each group were separately described in the classification."[32]

In *Malt Liquors from Midwestern Points to Pacific Coast,* the Commission vacated a suspension order and found justified proposed additional lower rates subject to a higher carload minimum weight than the prevailing rates and minimum weights on malt liquors in tin or glass, in boxes from St. Louis, Peoria, Chicago and Milwaukee to the Pacific Coast. Three scales of rates, each subject to different carload minimum weights, are found to be justified:

From	Minimum Weights in Lb. 30,000	40,000	50,000
Peoria, Chicago and Milwaukee	$1.24	$1.08	$ .93
St. Louis	$1.18	$1.03	$ .89

The proposed lower rates upon higher carload minimum weight were found to yield higher earnings than the higher rates on malt liquors, subject to lower carload minimum weights and higher also than other commodities with which comparisons were made.[33]

Higher Rates for Lower Minima

In *Western Cement Rates,* the Commission prescribed maximum joint through carload rates for the movement of cement in Western Trunk Line and between Western Trunk Line Territory and points in adjacent territories. A uniform minimum weight of 50,000 lb. was prescribed in connection with the basic or standard rates, but the rates were permitted to be established by the carriers on a basis of 13 per cent higher than the basic rate subject to a carload minimum weight of 38,000 lb.—a 13 per cent increase in rate and a 24 per cent reduction in carload minimum weight.[34]

The Commission stated: "We are further of the opinion and find that a uniform minimum weight of 50,000 lb. is reasonable throughout the territory within the scope of this investigation, and that if a lower minimum weight of

(*Continued on page 144*)

[25] *Waste Dealers Assn. of Arkansas v. C. R. I. & P. R. Co.,* (226 ICC 683), 1938.

[26] *Baldwin and Burke Safe Co. et al v. A. T. & S. F. Co. et al.* (192 ICC 1, 3), 1933.

[27] I. C. C. Docket No. 28800, *Blythville C. of C. et al v. A. & R. R. Co. et al.* decided December 5, 1944.

[28] I. & S. Docket No. 2874, *Lime Between Southern Points,* (129 ICC 635), 1927.

[29] I. & S. Docket No. 3742, *Lime, From, To & Between Points in the Southwest,* (194 ICC 559), 1933.

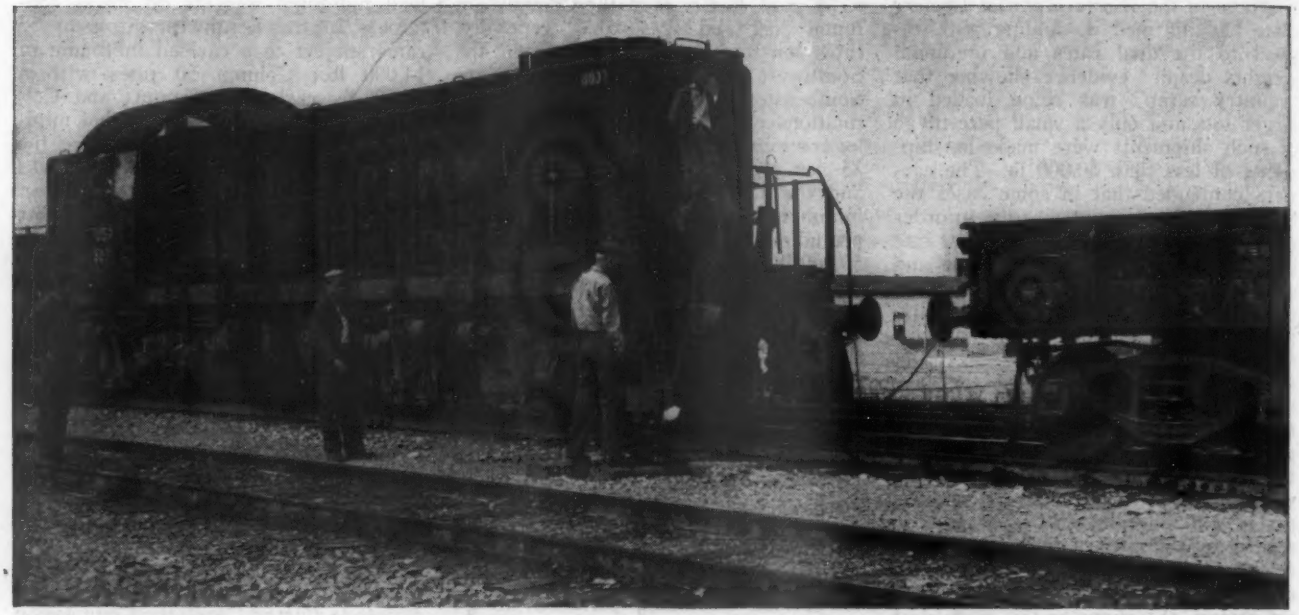
[30] (194 ICC 559, 565), 1933.

[31] (191 ICC 677, 787), 1933.

[32] Ibid, (191 ICC 677, 781), 1933.

[33] I. & S. Docket No. 4438, *Malt Liquor from Midwestern Points to Pacific Coast,* (227 ICC 494), 1938.

[34] *Western Cement Rates,* (48 ICC 201), 1918.



Photos by U. S. Army, P. G. C.

Switching Operations in the Yard at Andimenshk

Sgt. Carmen Serrianne, of Niagara Falls, N. Y., the conductor, signals engineer, T/5 Donald Kukull, of Hartford, Wash., while the brakeman, Pvt. Donald Welton of Youngstown, O., operates the switch—Watching the operation is T/Sgt. Stanley T. Jakubowski, of Milwaukee, general yardmaster.

30 Months of M.R.S. Railroading in Iran

Dropping a Piston Into a Cylinder of an American-Built 1,000-hp. Diesel-Electric Locomotive

(At left): T/Sgt. William Hess of Millsboro, Pa., non-commissioned officer in charge of the Diesel platform in the Ahwaz car shops; (Kneeling): Pfc. Andrew L. Edwards (center) of Big Fork, Ark.; and Pfc. William J. Vines of Woodville, Miss.

A SMALL number of rear echelon troops now remains at the various army-railroad camps along the 685-mile single-track Iranian State Railway which, after two and one-half years of American operation, lately has reverted to the control of the Iranian government (see *Railway Age*, July 14, page 67).

In the 30 months since the Americans went in, the 3rd Military Railway Service has delivered from Persian Gulf ports to the capital city of Teheran, Iran, nearly 3,000,000 long tons of lend-lease war materials to Soviet Russia, over what Headquarters calls "one of the world's longest and most tedious supply lifelines." Railroading in Iran meant working in weather ranging from intense heat in the desert to freezing temperature in the mountains.

At peak strength the 3rd M. R. S. totaled 4,026 enlisted men and 194 officers. Carrying capacity of the line was increased by constructing terminal storage yards, additional sidings, repair shops and fuel storage facilities, reballasting the entire route and replacing track, particularly in the mountainous tunnel section.

Motive power was increased by U. S. army railroaders with the addition of 180 locomotives. Of these, 57 were 1,000-hp. Diesel-electrics, 8 were 45-ton Diesel switching locomotives, 24 were 25-ton Diesel switchers bought by the Iranian State Railway, and 91 were 2-8-2 steam locomotives lend-leased to the British. To the rolling stock was added 5,175 freight cars of which 2,304 were lend-leased to the British. Air brakes were installed on most cars, and almost half of the nearly 8,000 cars in service at peak operations were equipped with heavier couplers that lessened danger of accidents.

Conglomeration of Power

Soon after the army railroaders took over, January 1, 1943, an average of 10 trains a day entered the Andimeshk yards, to be reassembled into half as many more for the long trip north through mountainous territory. "Those early days were a railroader's nightmare," recalls T/Sgt. Stanley T. Jakubowski, of Milwaukee, since 1943 yardmaster at Andimeshk, and formerly train clerk for the Chicago, Milwaukee, St. Paul & Pacific.

"When we first took over, we had all kinds of motive power—American, Swedish, British and German. Some of the engines were coal-burning. Others were oil-fired. We even had some wood-burning switch engines. Later we got some American-built 1,000-hp. Diesel-electric locomotives, and for some time we had to switch by the light of fireboxes," the yardmaster added, thinking about the engines without headlights.

Nor was that all, according to Sergeant Jakubowski. "Rolling stock had been built to varying standards by a half-dozen countries. Some cars were vacuum-braked, some air-braked and some hand-braked. Others had no brakes whatever. Some were un-braked but piped so that they could be placed between air-braked cars."

In making up a train, length, tonnage and brake distribution always had to be considered. High-octane gasoline and explosives had to be isolated, and clearances for the mountain tunnels considered. The maximum train length was set at 43 cars, because sidings at way stations, each spaced 9 to 15 miles apart, could not accommodate a larger consist unless it was broken.

Adding to the switching problems was the fact that no more than two power or hand-braked cars were permitted between those that were air-braked. At the height of operations, trains crammed with supplies would be strung out along the railroad south of Andimeshk for miles, waiting to get into the yards.

More Than a Tunnel a Mile

Chief dispatcher at Andimeshk was Capt. Lester Trout of Oskaloosa, Ia., and Roanoke, Va., former traveling freight agent for the Colorado & Midland. Two former railroaders served as assistant dispatchers—T/Sgt. William N. Neubeck, of North Collins, N. Y., agent for the Erie, and T/Sgt. Leighton R. Niles, of Cedar Rapids, Ia., former dispatcher for the Waterloo, Cedar Rapids & Northern. There were, in addition, seven dispatchers, at Andimeshk, who had a thorough knowledge of their territory. In the Luristan mountains, the grade averaged 1.5 per cent and in one stretch the railroad moved through 133 unventilated tunnels, having a combined length of 40 miles, in 106 miles of roadbed. The dispatcher sat before a selector which enabled him to call any of the way stations with a chest telephone and headpiece. Trains were moved in positive blocks under line-clear tickets. When a train approached a station, the operator called the next station and received authority to move the train.

During the height of operations an average of 12 trains a day were moved over the division.

In the car shops at Ahwaz, 13 members of the 762nd Railway Shop Battalion, under Foreman T/3 Edward H. Young, of East McKeesport, Pa. (former inspector for the Westinghouse Air Brake Co.), and his officer in charge, 1st Lt. Verner B. Adair (also of Westinghouse), installed, maintained and repaired air-brake equipment on steam and Diesel locomotives and rolling stock. Whereas at first only 12½ per cent of their equipment had air-brakes, applications were increased to the point where "runaway trains became a rarity" on the mountainous downgrade known as the "Dive Bomber" division.

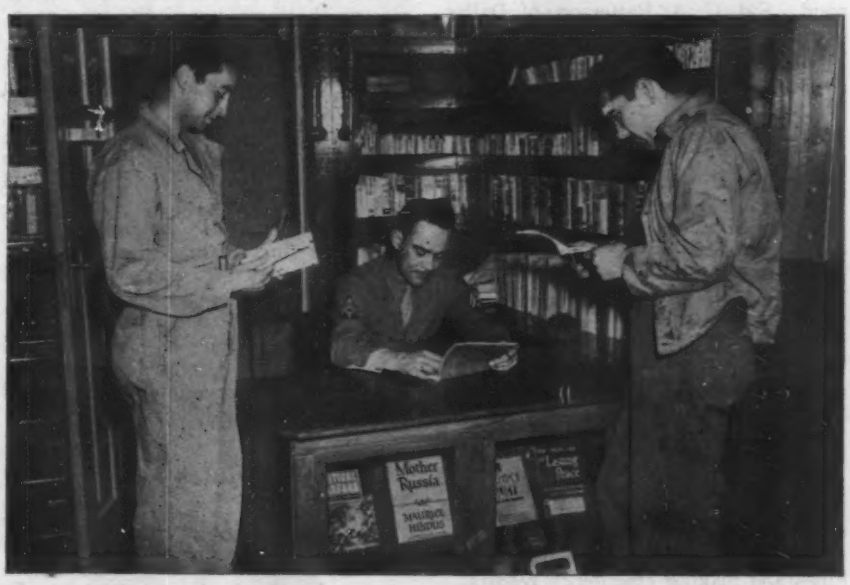
At the start, their handicap was lack of tools, Foreman Young recalls. There was no test rack, so one was built from salvage material. Toward the last, the job consisted mainly of maintenance and repair, with about five sets of brakes being checked into the shop each week.

2nd Lt. W. E. Lott, of Louisville, Ky. (former engineer on the Indianapolis division of the Pennsylvania), "knows every rock formation between Andimeshk and Teheran," having been continuously on the road investigating and checking engines. One angle of his work has been instructing classes (these were compulsory) in the operation of Diesel locomotives used exclusively in the mountain territory. For classes, two engines were placed on a siding at Andimeshk. The procedure was for two crews to go over the locomotives repairing the man-created defects. As Lieutenant Lott explained it, "Dirt is placed in electrical contacts, a bad fuse replaces one that is good and so on. There are dozens of defects that will stall an engine and which can be adjusted without the aid of tools. The men go over the engines and try to locate the sources of trouble. It keeps them on their toes, and, what counts, keeps the trains moving."

High in the Luristan mountains, Tange Haft, was the home stop for 30 army railroaders who worked the "rat hole" division between Andimeshk and

Dispatching at Andimenshk

T/5 William S. O'Dell of Fulton, Ky., a dispatcher, with chest phone and train sheet showing location of the trains. Looking on, T/Sgt. William N. Neubeck, of North Collins, N. Y., one of the three assistants.



Traveling Library and Classroom for Military Railroaders in Iran

The only mobile unit of its kind in any of the war theaters, this rebuilt box-car, which brought news of other theaters and educational opportunities to men in the P. G. C., contained a library, small stage, radio, phonograph, motion-picture projector and folding demonstration panels for maps and charts, and had seating capacity for 40—At the desk is T/5 George E. Schroebel, of Washington, D. C., a member of the 791st Railway Operating Battalion, assistant in charge of the car. Standing are two unidentified army railroaders.

Installing a Main Bearing on the Engine of a Diesel Locomotive

(From left to right): Sgt. Jack Flicker, of Philadelphia; Pfc. Andrew L. Edwards of Big Fork, Ark., and Pvt. Michael Barnetta, of Bethlehem, Pa.

Doroud (so-called because of the numerous unventilated tunnels). There they had their own power plant, water supply and purification system, and three barracks, two of them air-conditioned brick structures. All except two of the men were members of the 791st Railway Operating Battalion. Engineers, conductors and brakemen on the Diesel freight trains from Andimeshk made anywhere from 8- to 16-hr. layover at Tange Haft before proceeding to Doroud. Sgt. C. A. Patterson, of Dallas, Tex., a former Texas & Pacific conductor, was in charge of turn-around barracks at this point.

Safety Record Good

Another distinguishing point about Tange Haft: According to Headquarters, it was known to the army railroaders "as one of the best of all places to get a good meal." T/4 John Brooks of McComb, Miss., was in charge, with three cooks and two helpers.

Two trouble-shooters of Company A, 762nd Railway Shop Battalion, also made their home point at Tange Haft. They were S/Sgt. Victor Rothe, of Kansas City, Mo. (formerly with the Union Pacific) and T/5 Wendell K. Miller, of Kansas City, Kan. Their job was to ride the Diesel electric locomotives on the central division between Andimeshk and Arak, inspecting engines and making emergency repairs.

Four wreck trains were stationed along the Iranian State Railways. Typical of the train consist would be two cabin cars, one equipped to sleep eight; a kitchen car, a tool car, a fuel and water tender, a 75-ton derrick and the block or idle car under the boom. The wreck crews' biggest job came last September when 27 cars and their cargo left the rails, overturned and burned between Arak and Samagan, ripping 2,000 ft. of track. It took 20 hours to clear the line.

In its operation of the Iranian State Railway, the 3rd M. R. S. never had a soldier killed or permanently injured in a main-line accident.

How to Retain Heavier Loads

(*Continued from page 141*)

38,000 lb. is published the rates given herein should be increased by 13 per cent."[35]

The rates on shipments of frosted meats in carload lots from Butte, Montana, to New York and Baltimore rate points, upon a carload minimum weight of 21,000 lb. applicable to fresh meats or 30,000 lb. on packing house products, were found to be unreasonable for the future to the extent that they exceeded a lower rate upon a minimum of 45,000 lb., in *Hansen Packing Co. v. B. & O. R. Co. et al.* The rate found unreasonable was $2.40 per 100 lb., composed of a combination of $1.53 to the Mississippi river and 87 cents beyond. The alternative rate prescribed upon the carload minimum weight of 45,000 lb. was $1.85, composed of $1.15 to the east bank Mississippi river crossings and 70 cents beyond.[36] The Commission stated that it was tantamount to a dual minima and that it had not been the policy of the Commission to prescribe or for the carriers to establish alternative commodity rates on different minima. It observed: "However, there are instances where, under appropriate conditions, a lower rate on the same commodity may properly apply to a higher carload minimum, and in some such situations the carriers and the Commission have departed from that policy.

These instances can be classified as cases where to do otherwise would be contrary to the public interest and amount to a denial of substantial justice. We are of the opinion that the conditions surrounding the movement of the commodity here considered are such as to justify the prescription of an alternative rate and minimum. Moreover, our findings here will result in materially greater per-car earnings than now accrue under the assailed rate and minimum.[37]

Alternative Rates on Formula

The Commission has stated, directly or indirectly, that there are no formulas for the determination of alternative rates and carload minimum weight. In *Western Cement Rates* in 1918 the Commission considered the establishment in Western Trunk Line Territory of dual rates and minimum weights a basic rate with a carload minimum weight of 50,000 lb. with an alternative scale of rates 13 per cent higher with a carload minimum weight of 38,000 lb.

As a basis for these rates the Commission considered the gross weights of the cars and their contents and the level of rates required to produce the same revenue upon the lower carload minimum than at the lower rates and higher carload minimum. The Commission stated: "Generally, the minimum weight in the commodity tariffs used is 50,000 lb., but minima of 38,000, 30,000 and 24,000 lb. also occur. On the basis of the ratio of the net to the gross weight of car and contents, a 38,000-lb. load requires rates about 13 per cent higher than a 50,000-lb. load to afford the same revenue per gross ton-mile, and a 24,000-lb. load required rates about 45 per cent higher than a 50,000-lb. load, counting the weight of the car at 17½ tons, or 35,000 lb.[38]

In *Cotton From and to Points in the Southwest and Memphis,* the Commission stated that: "There is no recognized basis or formula for relating the rates on the same commodity in connection with different carload minima."[39]

In considering carload minimum weights generally, either with or without dual or multiple rates and minima, the Commission has emphasized that both the transportation and commercial or sales considerations or practices, must be considered. It has said that, generally, freight cars should be made to fit the business or traffic offered although, within reasonable limits, the business might reasonably be required to adapt itself to freight cars. The interests of small shippers and consignees and trade practices must be considered along with transportation requirements and the physical dimensions of the freight car.

In recent years the trend of the Commission's decisions in dual or multiple rates and minimum weight cases appears to indicate a more liberal attitude toward this means of inducing heavier carloading. Perhaps this attitude can best be indicated in the Commission's expressions in two cases, cited above. In the *Baldwin and Burke Safe* case it said: "Under circumstances where heavier loading is possible shippers should be encouraged to load up to the full capacity of the cars by maintenance of rates and minimum (sic) based upon such loading."[40]

In the *Arkansas Waste Dealers* case, it observed: "No sweeping generalization in regard to the propriety of alternative and minima can be made. In some cases we have recognized that there are certain objections to this method of rate publication . . . while in other cases, to meet the needs of particular traffic, we have approved or prescribed alternative rates or minima."[41]

[35] Ibid. (48 ICC 201, 248-249), 1918.
[36] *Hansen Packing Company v. B. & O. R. Co. et al* (196 ICC 722), 1933.
[37] (196 ICC 722, 726), 1933.
[38] *Western Cement Rates,* (48 ICC 201, 209-210), 1918.
[39] (208 ICC 677, 698), 1935.
[40] (192 ICC 1, 3), 1933; see footnote (26) above.
[41] (226 ICC 683), 1938; see footnote (25) above.

Mechanical Division Reports Presented

Meeting of General Committee hears reports of eleven standing committees and acts to advance important work during coming arduous months

R. G. Henley,
Acting Chairman

V. R. Hawthorne,
Executive Vice-Chairman

H. W. Jones,
Vice-Chairman

OWING to war conditions, the annual June meeting of the A. A. R. Mechanical Division for 1945 was not held and, in lieu thereof, the General Committee met at Chicago on June 28 and 29 to transact necessary business and was joined on the first day by the chairmen of 11 standing committees who presented their respective reports and recommendations bearing on the more efficient maintenance and use of locomotive and car equipment.

Present officers of the Division, who will continue to function until the next regular annual meeting, include: chairman, R. G. Henley, general superintendent of motive power, Norfolk & Western; vice-chairman, H. W. Jones, chief of motive power, Pennsylvania; executive vice-chairman, V. R. Hawthorne; secretary, A. C. Browning, and mechanical engineer, W. I. Cantley. Two new members elected to the General Committee include A. G. Kann, general superintendent of equipment, Illinois Central, in place of P. O. Christy, who held that position on the I. C. and recently retired on account of ill health; also J. E. Goodwin, chief mechanical officer, Chicago & North Western, in place of H. H. Urbach, mechanical assistant to the executive vice-president, Chicago, Burlington & Quincy, who resigned from the General Committee.

In general, the work and responsibilities of the Mechanical Division have been greatly augmented during the war period, but are of such a character, for the most part, as not to be reflected in committee reports which have been curtailed and reduced to minimum requirements. Among other activities relating to matters of national defense not covered in published reports, mention may be made of the work of the car construction committee in contributing to the design of emergency troop sleepers and kitchen cars. Similarly, the work of the tank car committee has been an important factor in conserving material and expediting the construction of this type of car which, through intensive use, has made a major contribution to the war effort. The Mechanical Inspection department of the Division also has been concentrating for the last two or three years, in particular, on the maintenance of tank cars for oil movement to the east coast and assisting in every way possible in improving car conditions.

As previously mentioned in these col-

A. C. Browning,
Secretary

W. I. Cantley,
Mechanical Engineer

umns, one of the hardest working committees of the Mechanical Division is that on Loading Rules which, through subcommittees, still makes almost daily contact with ordnance plants, army posts, or military supply depots in connection with some problem of the loading of military supplies. This committee also has an inspector continuously engaged in co-operating with the armed forces in preparing shipments of military equipment for safe and satisfactory rail transportation.

The Arbitration Committee has continued its quiet but vital contribution to the orderly handling of cars in interchange. In connection with couplers and draft gear, the tightlock coupler, while not a new development of the committee, has demonstrated its merit in a number of recent derailments by holding passenger cars together and thus tending to prevent cars from telescoping, turning over, or rolling down embankments.

A special committee, including representatives of the Committee on Wheels, Locomotive Construction and Car Construction Committees, has worked with the manufacturers of steel wheels with a view to reducing the number of designs of wheels. The wheel committee is also co-operating with manufacturers of chilled car wheels in the service testing of an improved wheel of this type. Another major effort of the wheel committee has been revision of the Wheel and Axle Manual which will be off the press about September 1.

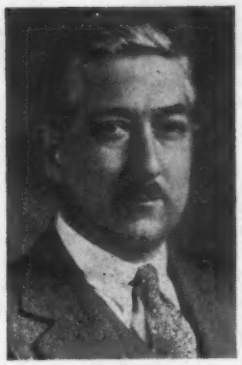
An outstanding job has been done by

J. M. Nicholson

W. H. Flynn

◆

H. B. Bowen



O. A. Garber

◆

J. E. Goodwin

A. G. Kann

B. M. Brown

General Committee
A.A.R.
Mechanical Division

A. K. Galloway

C. B. Hitch

J. Gogerty

the Committee on Lubrication of Cars and Locomotives in improving the lubrication of railway equipment and the conservation of material used for that purpose. Other committees also have functioned efficiently and abstracts of their reports will be found in the following pages.

In connection with instructions issued by Vice-President C. H. Buford on May 4 to remove from service and send to owners for repairs or retirement badly deteriorated freight cars, it is estimated that 50 cars a day are now being sent to the owners and given proper repairs. This not only makes additional cars available for satisfactory loading and movement on railroads, but prevents delays to other cars and loads when defective equipment is permitted to pass through interchange and to be made up in regular trains.

Research activities of the Mechanical Division have been increased along many lines during the last year and will be continued. Among important studies recently completed, or now in progress, mention may be made of the following: axles, crank pins, counterbalance standards, springs, journal bearings, lubricants for roller bearings, geared hand brakes and hot-box alarms.

Specifications for Materials

Annulment of several emergency specifications recommended—Changes recommended in standard specifications for forgings and castings and in emergency brake and signal-hose specifications

The committee has given consideration to the annulment of certain emergency specifications as would be desirable and permissible at this time in view of the revocation by the War Production Board of certain schedules of Limitation Order L-211. Consideration has also been given to changes and revisions of certain standard specifications and the following recommendations are submitted:

Carbon Steel Axles

It is recommended that the annulment of emergency specifications E.M. 101-42, for carbon steel axles for cars and locomotive tenders in view of W. P. B. revocation of Schedule V to L-211, also the following revisions of standard specifications M-101-41, be submitted to letter ballot.

Revise Sec. 1 (b) as follows: Three grades of axles are provided including: Grade A—as forged axles up to and including those 6½ in. nominal diameter at the center; Grade B—annealed axles of any size; Grade C—normalized and tempered axles of any size. Freight car axles over 6½ in. diameter at the center shall be furnished in this grade.

Change "Paragraph" to "Section" in Sec. 13, 14 and 15 (d).

Sec. 20 (b)—If any test specimen fails because of mechanical reasons, it may be discarded and another specimen taken.

Add new Par. (a) in Sec. 22, and move others down from (a) and (b) to (b) and (c):—

Sec. 22 (a) If the results of the physical tests of any test lot do not conform to the requirements specified because a flaw developed in the test specimen during testing, a retest shall be allowed if the defect is not caused by ruptures, cracks, or flakes in the steel.

Sec. 22 (b) present (a)—Change Par. 18 to Sec. 18.

Sec. 22 (c) present (b)—Change Par. 18 to 21 to Sec. 18 to 21.

Sec. 23 (a)—Change the last line to read "dimensions shown in Sec. D of the Manual."

Rewrite Sec. 27 (a) Axles which do not have black collars shall be legibly stamped with letters and figures not less than ¼ in. high, in the location shown in Fig. 6. (b) Axles having black collars may have the same information stamped on the collar with letters and figures not less than ¼ in. high. In this case, the requirement to finish turn one end of the axle for stamping may be disregarded.

Fig. 6 to be revised so as to omit Notes 2 and 5.

Forgings

Specifications have been prepared, embracing in one specification, only carbon steel forgings, annealed and unannealed, normalized and tempered, and quenched and tempered, and in another specification alloy steel forgings, normalized and tempered, and quenched and tempered. These two specifications are intended to replace standard A. A. R. specifications M-102 and M-104, and reference to A. S. T. M. specifications A-236 and A-238 in the association's standards.

(The two recommended specifications are shown as Exhibit *A*, Spec. M-126-45 for carbon steel forgings and Exhibit *B*, Spec. M-127-45 for alloy steel forgings. These two exhibits, also Exhibits *C* to *H*, incl., prepared by the committee are not included, for lack of space, in this abstract of the committee's report.—*Editor.*)

Both of these specifications have been submitted to the Committee on Car Construction and the Committee on Locomotive Construction, and a majority approval was received from both committees. Comments received from one member on each of the committees mentioned have been thoroughly analyzed, and it is felt that the specifications as written are clear as to intent, and that forgings complying with their requirements will be fully satisfactory.

Blooms, Billets and Slabs

It is recommended that the question of rescinding Spec. M-105-41 and emergency Spec. E.M. 105-42 for blooms, billets and slabs for forgings be referred to letter ballot of the members. This recommendation is made for the reason that the A. S. T. M. specifications referred to in emergency Spec. E.M. 105-42, have been nullified by that society, and the requirements of our present standard specifications, M-105-41, are such that it is desirable that they be revised to broaden the scope of the specifications, and incorporate additional desirable requirements.

It is, therefore, recommended that, until new A. A. R. specifications can be prepared, with up-to-date requirements, there be shown in the A. A. R. Manual a sheet identified as M-105-45, Exhibit C.

It is recommended that annulment of emergency Spec. E.M. 106-42, for steel tires, locomotive and car, permitted through revocation by W. P. B. of Schedule 11 to L-211, be approved.

Reference to A. S. T. M. Spec. A-53-42 covering furnace-welded, electric-resistance-welded and seamless steel pipe should be changed to A. S. T. M. Spec. A-53-44.

It is recommended that annulment of emergency Spec. E.M. 112-43 covering carbon steel bars for railway springs be approved. It is further recommended that standard Spec. M-112-42 be modified by adding requirements shown in emergency Spec. E.M.-112-43, covering flat spring steel bars, over 6 in. to 8 in. inclusive, to the table in Sec. III.

To bring the requirements of Spec. M-115 for boiler and firebox carbon steel up to date, and to include available classes of this grade of steel, the specifications have been revised, and it is recommended that the revised specifications, Exhibit D, be submitted to letter ballot of the members.

The physical requirements of the usual grades have not been changed; however recognized tensile requirements for carbon-silicon steel have been added, and the chemical compositions have also been brought in compliance with present recognized practices.

It is further recommended that annulment of emergency Spec. E.M. 115-43, permitted through revocation, by the W. P. B., of Schedule 8 to L-211, be approved.

It is recommended that the following be submitted to letter ballot of the members: (a) Annulment of emergency Spec. E.M. 116-43, as permitted through revocation, by the W. P. B., of Schedule 8 to L-211; (b) Modification of standard Spec. M-116 covering structural-steel shapes, plates and bars, as follows:

Sec. II. Chemical Properties and Tests, Par. 5. Check analyses may be made by the purchaser from finished material representing each melt. The chemical composition thus determined shall not exceed the requirements specified in Par. 3 by more than 25 per cent. The specifications are otherwise to remain the same as now printed.

It is recommended that the following be submitted to letter ballot of the members: (a) Annulment of emergency Spec. E.M. 117-43 covering steel sheets and thin plates, as permitted through revocation, by the W. P. B., of Schedule 8 to L-211; (b) Revision of standard Spec. M-117, as follows: Sec. II. Chemical Properties and Tests, Par. 5. Check analysis—An analysis may be made by the purchaser from finished material representing each melt or lot of ten tons. The carbon, phosphorus, and sulphur content thus determined shall not exceed that specified in Sec. 4 by more than 25 per cent.

It is recommended that annulment of emergency Spec. E.M. 124-42 covering heat-treated tires for cars and locomotives permitted through revocation by the W. P. B. of Schedule 11 to L-211, be approved.

Steel Castings

To bring M-201-36 and emergency Spec. E.M. 201-42 for steel castings up to date, and broaden its scope so as to take advantage of improved present-day practices, new specifications have been drafted, and are identified as Exhibit E.

These specifications have been submitted to the Committee on Car Construction and the Committee on Locomotive Construction, and a majority approval was received from both committees. Comments received from one member of each of the committees mentioned have been thoroughly analyzed, and it is felt that the specifications as written are clear as to intent, and that castings furnished in compliance with the requirements of these specifications would be fully satisfactory.

It is recommended that annulment of emergency Spec. E.M. 201-42, and revision of standard Spec. M-201-36 be submitted to letter ballot of the members.

Malleable-Iron Castings

To provide for the use of an alternate test specimen to be permitted under A. A. R. Spec. M-402, for malleable iron castings, it is recommended that Par. 5 (first sentence) be changed to read as follows: Test Specimens.—(a) Tension test specimens can be of the form and dimensions shown in Fig. 1 or Fig. 1-a (design of alternate test specimen, attached, identified as Exhibit F, should be shown below Fig. 1 on page 2 of specifications, and designated as Fig. 1-a).

Emergency Spec. E.M. 601-44 for air brake and train air signal hose have been revised to include a cover made of Neoprene rubber. The revised emergency Spec. E.M. 601-45, shown in Exhibit G, are recommended for approval.

It is recommended that specifications for rubber goods, general instructions on standard methods of tests be covered by including in the manual emergency Spec. E.M. 607-45, Exhibit H.

In accordance with practice of reviewing specifications in effect for five years, without change, it is recommended that Spec. M-908-34, covering paper, insulation, for refrigerator cars, be reaffirmed.

As general information, the various laboratories represented in the Committee on Specifications for Materials, are presently carrying out some cooperative investigations of various items, particularly in connection with age resistance tests of synthetic rubber, Buna S and Neoprene, for cover of air brake hose, brake cylinder lubricants, etc.

The chairman of the committee is T. D. Sedwick, engineer of tests, Chicago, Rock Island & Pacific.

Report on Prices for Labor and Materials

Material prices, rechecked March 1, 1945, show slight increases requiring rule changes—No change in per pound settlement basis for freight cars

In order that the rules may currently provide an equitable basis for interroad billing, your committee has continued the work of analyzing material, labor and new equipment costs in A. A. R. Interchange Rules 101, 107, 111 and 112 of the Freight-Car Code, and Rules 21 and 22 of the Passenger-Car Code, with a view of determining and recommending necessary changes to be made in the next supplement to the current code.

Rule 101

All miscellaneous material prices in Rule 101 were rechecked as of March 1, 1945, quotations submitted by the purchasing agents of the 10 selected railroads, representing 39 per cent of total freight car ownership in the United States and Canada, showing a slight upward trend in material markets as indicated by detail recommendations for revisions shown under this rule.

New Item 107-C is added to provide charge and credit for A. A. R. approved types of geared hand brakes.

Revised identification table for brake beams as recommended by the Committee on Car Construction, which eliminates obsolete types of beams, is substituted for present Fig. 1 (page 205 of the 1945 code of interchange rules) References thereto in Notes 2 and 4 following Item 213 have been modified accordingly.

The item "Brake Wheel" in the table of weights of miscellaneous items on page 210 of the current Code, is modified to indicate that wheels for geared hand brakes are not included.

Rule 107

Item 41 is eliminated and the wording of Item 98 modified to provide that R. & R. or R. of center pin is included in the allowances prescribed therein which is considered ample to absorb the go-get expense involved.

Item 114 is modified to eliminate conflict with Item 81.

Rule 112

No tank cars of classes 103, 103-A and 203 were built during 1944 and other types of freight cars constructed were considerably below the quantities on which per-pound settlement prices have been established in the past. For this reason and because the cars were mostly built in small lots under prevailing emergency conditions with wide fluctuations in costs, and also because material quotations during 1944 reflected only slight changes over the two preceding years, no change in per-pound settlement prices for freight cars is recommended.

Passenger-Car Rule 21

Item 20-K (slack adjusters) is modified to include necessary repair work and the allowance is increased accordingly.

Passenger-Car Rule 22

Material price quotations were rechecked on the basis of quotations as of March 1, 1945, showing a slight upward trend, as indicated by detail recommendations for revisions shown under this rule, with the exception of service metal on wrought-steel wheels which reflects a slight decrease brought about by increase in scrap prices.

News Items 38-A, 39-A, 40-A, 41-A and 42-E are added to provide allowances for 2½-in. steam train-line parts and appurtenances, and Note 1 under Item 41 is modified accordingly.

It is the intent of the committee to investigate material costs again in October and if sufficient change develops, necessary revision will be made and inserted in the Rules effective January 1, 1946.

J. D. Rezner, superintendent car department, Chicago, Burlington and Quincy, is chairman of the committee.

Report of the Committee on Couplers and Draft Gears

Draft-key retainer changes are recommended to obtain a more secure type—Two coupler reclamation projects not accepted—Development of an interlocking-type freight coupler is now under way

During the year the committee held two meetings, a portion of each meeting being in conjunction with the Coupler Manufacturers Mechanical Committee that consideration might be given to problems of mutual interest.

One circular letter was directed to the members and private car owners during the year, dated August 10, 1944, relating to the abusive treatment of draft keys resulting from the indiscriminate use of the cutting torch. This letter was accompanied by photographic illustrations of the conditions observed on a member road.

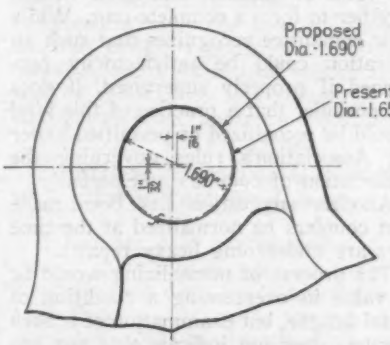
Draft-Key Retainers

It is the opinion of the committee that the inspection of draft-key retainers in transportation yards would be improved if all draft keys were applied from the brake-pipe side, since when keys are applied from the opposite side the brake pipe interferes with clear vision of the retainer and the accompanying cotter.

In addition to improving the inspection facilities of the draft-key retainer, when keys are applied as suggested, the brake pipe in many instances would serve as a retarding influence should the retainer be missing. Should the key continue to work out there is a possibility of fracturing the brake pipe and causing application of the brakes under which condition the defective draft equipment would be detected.

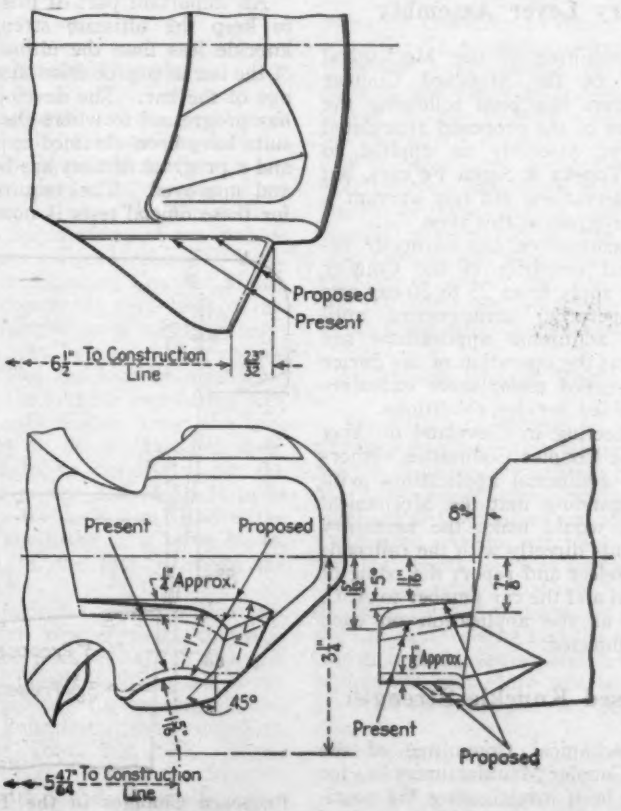
In its meeting in Cleveland on May 3, 1945, the committee was unanimous in recommending to the Committee on Car Construction that draft keys be applied from the brake-pipe side in order to facilitate inspection of the draft-key retainer and cotter.

In the 1944 report mention was made of the appointment of a joint subcommittee of the Car Construction Committee and the Committee on Couplers and Draft Gears to evolve a more secure type of draft-key retainer. Investigation of the loss of retainers due to shearing of the cotter developed that this condition was occurring when the standard retainer would ride up on the shoulder of the outside cheek plates used with two- and three-key draft-gear attachments thus causing a shearing action against the cotter. Recognizing this condition the joint subcommittee presented for consideration a modified retainer in which a steel strap was welded to the top of the retainer head in such a manner that the strap could be bent around and under the edge of the draft key and thus prevent it swiveling into a position where the head would foul on the cheek plate. The Couple' Committee approved this suggested retainer and referred it to the Car Construction Committee.



Proposed Change in the Diameter of the Pivot-Pin Hole in the Pivot Lugs of the Type H Tightlock Coupler

A further development along this line is the modification of the retainer shown in Fig. 2 of the 1944 report, and consists of a forged retainer with the ends elongated to the extent they can be turned under the draft key to prevent swiveling. This type of retainer also met the approval of the committee and was referred to the Car Construction Committee for its consideration.



Proposed Changes in the Lock Shelf of the Type H Tightlock Coupler Knuckle to Permit Seating of the Lock

Maintenance of Draft Gears

In the early part of 1934, the Director of the Bureau of Safety of the Interstate Commerce Commission, stressed the importance of improving the condition of draft gears and attachments thus reducing the unresisted slack in the coupler and draft-gear assembly. At that time a member road represented on the committee made a check of 1,838 car ends and found that 18.7 per cent of the cars would require attention on the basis of the 1½-in. limit and 38.4 per cent on the 1-in. limit. At that time 1½-in. unresisted slack was set as a limit to be observed when cars were on the shop track and established as recommended practice in 1934 (see Plate L-142-1942 of the Manual of Standard and Recommended Practice).

A similar survey was recently made on the same road involving 3,095 car ends; this survey showed only 3.6 per

cent over the 1½-in. limit and 10.4 per cent showed 1 in. free slack.

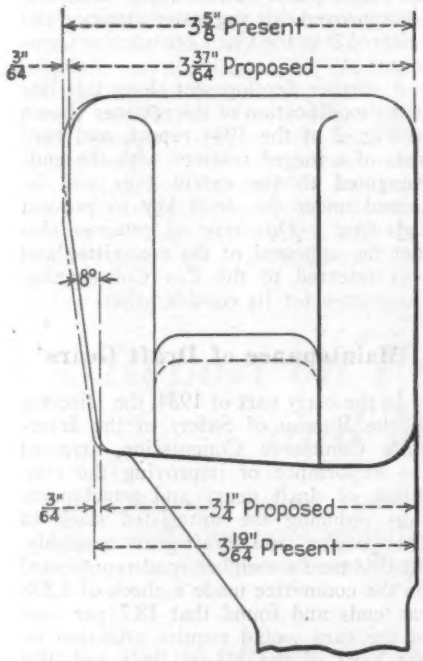
The committee, in considering this subject recommends that 1 in. be adopted as recommended practice and Plate L-142-1942 be revised by reducing the present 1½ in. dimension to 1 in.

Reclamation of Couplers, Etc.

During the year two items of reclamation have been presented to your Committee for consideration. One was prompted by a report from the A. A. R. mechanical inspectors that they had found instances where parts of separate couplers, the shank of one coupler and the head of another, had been welded together to form a complete unit. While your committee recognizes that such an operation could be satisfactorily performed if properly supervised, it does not consider that a practice of this kind should be recognized or permitted under the Association's rules governing the reclamation of couplers and parts.

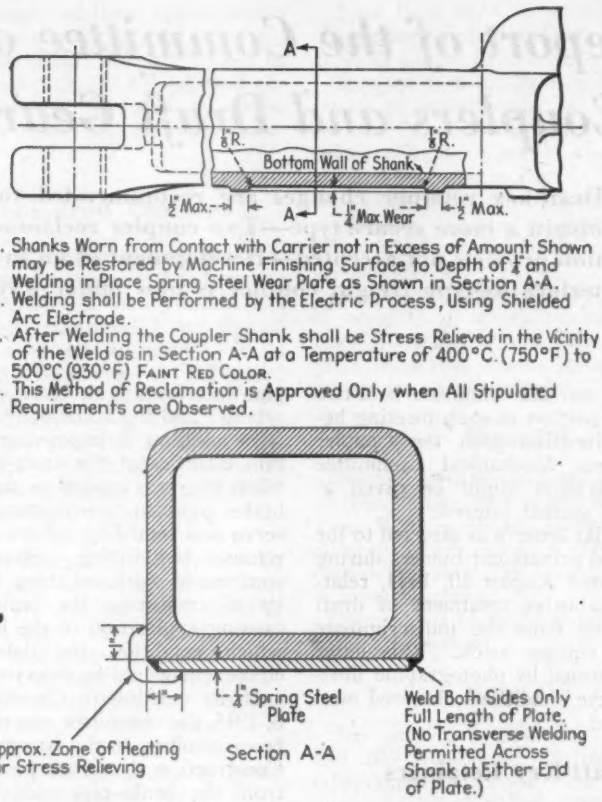
Another suggestion has been made that couplers be normalized at the time cars are undergoing heavy repairs.

The process of normalizing would be of value in overcoming a condition of metal fatigue, but examination of broken couplers does not indicate that any appreciable proportion of these failures can be attributed to metal fatigue. Taking into consideration the fact that the couplers would have to be completely dismantled for the normalizing treatment



Proposed Changes in the Thickness of the Type H Tightlock Coupler Lock to Permit Seating on Knuckle-Tail Shelf

due to the difference in composition of parts, and the questionable value that might be obtained from a general practice of this nature, the committee does not look with favor upon recognizing this as a suitable procedure to improve the shock resistance of the coupler.



1. Shanks Worn from Contact with Carrier not in Excess of Amount Shown may be Restored by Machine Finishing Surface to Depth of 1/4" and Welding in Place Spring Steel Wear Plate as Shown in Section A-A.
2. Welding shall be Performed by the Electric Process, Using Shielded Arc Electrode.
3. After Welding the Coupler Shank shall be Stress Relieved in the Vicinity of the Weld as in Section A-A at a Temperature of 400°C. (750°F) to 500°C (930°F) Faint Red Color.
4. This Method of Reclamation is Approved Only when All Stipulated Requirements are Observed.

Method of Reclaiming Tightlock Coupler Shanks When Worn from Contact with the Carrier

Rotary Lever Assembly

A subcommittee of the Mechanical Committee of the Standard Coupler Manufacturers has been following the performance of the proposed articulated rotary lever assembly as applied to Atchison, Topeka & Santa Fe cars, but limited observations did not warrant a report of progress at this time.

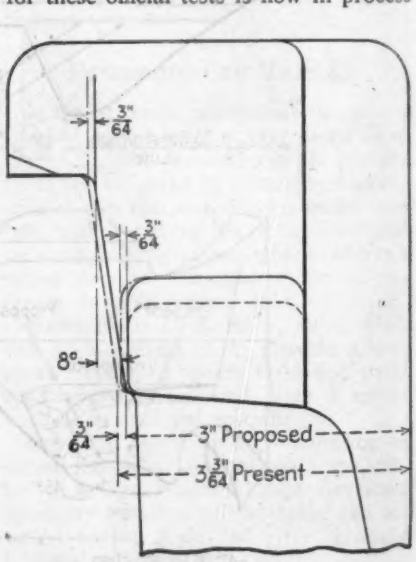
The subcommittee has earnestly requested that members of the Coupler Committee apply from 25 to 50 car sets of this operating arrangement until some 200 additional applications are made so that the operation of the device can be observed under more extensive and diversified service conditions.

At its meeting in Cleveland on May 3, 1945, the Coupler Committee authorized these additional applications with the understanding that the Mechanical Committee would make the necessary arrangements directly with the railroads they may select and report the name of the railroad and the car number to A. C. Browning as the application on each road is completed.

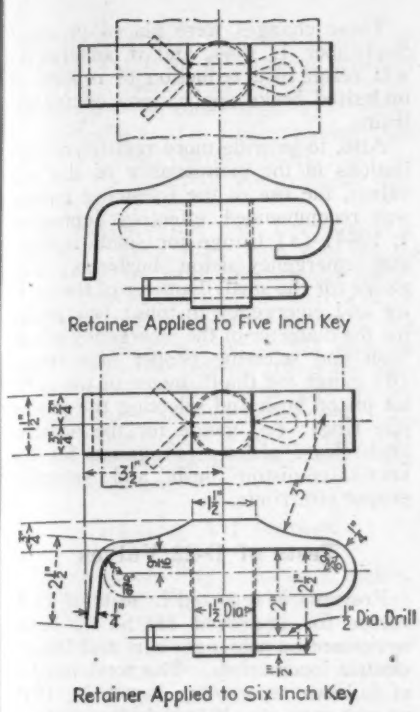
Increased Knuckle Strength

The Mechanical Committee of the Standard Coupler Manufacturers has for some time been investigating the possibility of increasing the yield strength of knuckles for standard Type-E and tightlock couplers in order to reduce the stretching and breakage of knuckles occurring in service.

An important part of this problem is to keep the ultimate strength of the knuckle less than the ultimate strength of the bar as a protection against breakage of the bar. The development work has progressed to where the desired results have been obtained experimentally and a program of tests has been laid out and approved. The required material for these official tests is now in process



Proposed Changes in the Thickness of the T-Type Tightlock Coupler Lock to Permit Seating on Knuckle-Tail Shelf



A Forged Draft-Gear Retainer with Elongated Ends for Turning Under the Key to Prevent Swiveling

and when available, arrangements will be made to conduct the tests under the supervision of the joint subcommittee representing both the Mechanical Committee and the Coupler Committee having in mind that when this program is completed suitable specifications will be developed.

Tightlock Couplers

During the past year the problem of sticking locks in tightlock couplers has been carefully investigated. Service experience has demonstrated that when the lock becomes seated on the shelf of the knuckle tail, sticking of the lock no longer occurs. The Mechanical Committee of the Standard Coupler Manufacturers recommends that when objectionable sticking of locks occurs in service, adjustments be made by reducing the thickness of the lock by machining or grinding the knuckle face of the lock an amount sufficient to lower the lock until it seats on the knuckle-tail shelf. The amount to be removed from the knuckle face of the lock depends upon the distance the lock seats above the knuckle tail shelf, the ratio being 1/64 in. for each 1/8 in. the lock is above the shelf.

The Mechanical Committee also recommended for new Type-H couplers, changes in the thickness of the lock and the height of the shelf on the tail of the knuckle to provide for seating of the lock on the knuckle-tail shelf or not to exceed 1/8 in. above the shelf. These changes were approved by the Coupler Committee with the understanding that the coupler manufacturers will continue to consider other possible means to eliminate sticking of locks and still retain the take-up slack feature. This approval also included a reduction in the thickness of locks as manufactured for maintenance of T-type tightlock couplers modified in accordance with Circular No. 942-A.

Another improvement affecting the tightlock coupler was recently recommended by the Mechanical Committee and has been approved by the Coupler Committee. This change involves an increase in the diameter of the pivot-pin hole in the pivot lugs of the Type-H coupler head, the Type-H knuckle and the T-type knuckle. Service experience has shown that the previous diameter of the pin hole was too small to accommodate satisfactorily the standard knuckle pin and to provide for proper fitting between the pulling lugs and buffing shoulders of the coupler head and knuckle.

An improvement has been made effecting the interlock between the guard arm and gathering wing pocket to assure more satisfactory coupling between two type-H couplers even though the end of the guard arm of either or both couplers has been bent outward as much as 3/4 in.

All Type-H couplers, knuckles and locks as well as knuckles and locks for maintenance to T-type modified couplers bearing cast date May, 1945, and later, will incorporate all the above improvements.

In February, 1943, the Committee on Couplers and Draft Gears and the General Committee approved the modification of existing T-type tightlock couplers in accordance with Mechanical Committee Circular No. 942-A, which provides for changing to rotary operation, using the No. 6 coupler operating mechanism and incorporating the same principle of anti-creep arrangement as employed in the Type-H coupler. With few exceptions, the railroads using tightlock couplers have initiated a modification program and have a considerable number of these couplers modified. The coupler manufacturers have improved conditions so that they are now in better position to supply the needed coupler and operating mechanism parts to keep these modification programs moving.

Tightlock Shank Reclamation

A satisfactory method of reclaiming tightlock coupler shanks where they have been worn from contact with the carrier has been under consideration by the Mechanical Committee and the Coupler Committee. At the last joint meeting a reclamation practice was approved which consists of smooth machine finishing of the worn surface of the shank to a depth of 1/4 in. and welding into the recess thus formed a 1/4-in. spring-steel plate. This reclamation procedure will be issued in the form of a circular for general distribution.

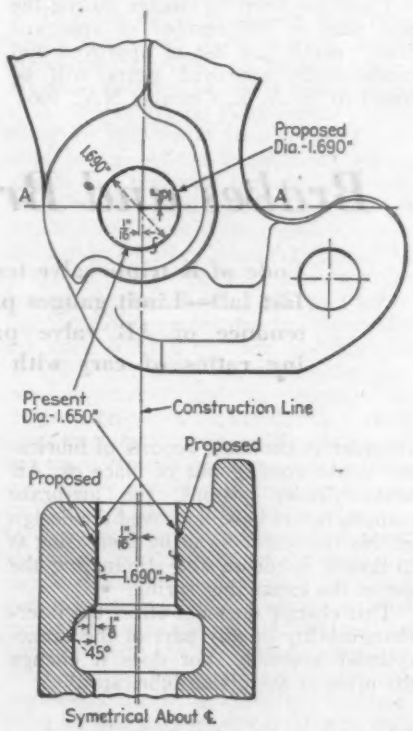
The Mechanical Committee is now preparing a new circular which will cover all recommended tightlock coupler reclamation practices, including that here described. It is intended to include also in this circular a complete guide to the proper maintenance of tightlock couplers. This circular when completed will be made available to all concerned.

Interlocking Freight Coupler

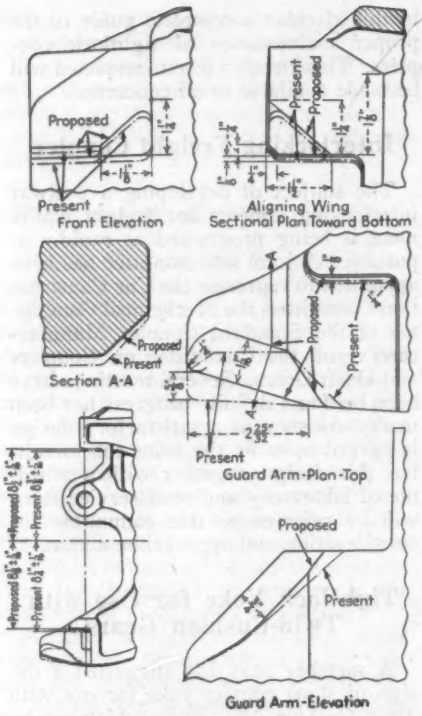
The subject of developing a postwar interlocking coupler for freight equipment is being progressed as rapidly as possible. A joint subcommittee has been appointed to represent the Car Construction Committee, the Mechanical Committee of the Standard Coupler Manufacturers and the Committee on Couplers and Draft Gears. Several meetings have been held and definite progress has been made. As soon as a satisfactory design is agreed upon by the joint subcommittee, this design, together with a schedule of laboratory and road service tests, will be referred to this committee for consideration and appropriate action.

Tightlock Yoke for Use with Twin-Cushion Gears

A member road has suggested a design of short coupler yoke for use with Twin-Cushion draft gears which can be applied to a car with the standard A. A. R. 24 5/8-in. length draft gear pocket. This design has been considered jointly with the Mechanical Committee of the Standard Coupler Manufacturers and plans are now under way for making necessary laboratory tests to develop principally the column strength of the yoke under buff. This matter is being progressed as rapidly as existing conditions will permit, and appears to the



The Proposed Change in Diameter of the Pivot-Pin Hole of Type H and T-Type Tightlock Coupler Knuckles



Proposed Changes in the Guard Arm and Alignment Wing of the Type H Tightlock Coupler to Allow for More Guard-Arm Distortion in Service

committee as being a desirable design pending the results of the laboratory tests.

Report on Draft Gears

There has been no change during the past year in the number of approved draft gears. The list of approved and conditionally approved gears will be found in A. A. R. Circular N.V. 1067, page 11, and also in the latest copy of the Interchange Rules under Rule 101.

During the past year authority has been granted for the application of 2,500 additional car sets of the gear which is designated as Waugh Twin-Cushion Type WM 4-6. By this action the total applications authorized to date amount to 3,900 car sets.

The subcommittee has recently obtained specific information from the various manufacturers covering physical properties of substitute materials which are being used in certain certified gears during the present emergency because of government restrictions on the use of critical materials. In most instances the manufacturer proposes to return to the use of original materials as soon as they are again available and the subcommittee will require this in all cases unless it can be shown that the substitute materials are as good as or better than those originally specified.

Canadian Draft Gears

As promised in last year's report, specimens of all certified gears manufactured in Canada were selected at random from railroad or car builders stocks by representatives of the subcommittee and shipped to the Association Laboratory at Purdue University for check tests. These tests have been in progress since last summer and should be completed soon, after which the results will be reported in due course. It may be stated at this time, however, that certain deficiencies have already been called to the attention of the manufacturers involved with the suggestion that prompt corrective action be taken. In each case these manufacturers have shown a disposition to cooperate willingly.

H. W. Coddington, research and test engineer, Norfolk & Western, is chairman of the committee.

Brakes and Brake Equipment

Code of K triple-valve tests made more restrictive last fall—Limit gauges proposed to control maintenance of AB valve parts—Revision of braking ratios of cars with low gross-to-tare weight

In order to eliminate reports of lubricator swabs coming out of place on AB brake-cylinder pistons, the air-brake manufacturers have improved the design of this lubricator swab by increasing it to double its depth and eliminating the use of the expanding spring.

This change does not effect the interchangeability of any part of the brake-cylinder assembly, nor does it change the price of the piston lubricator.

Maintenance of Freight Brakes

A thorough investigation had revealed a number of mechanical variations from standard in the triple valves and test racks, which had an influence on the operation of K valves. Instructions were sent to all concerned calling attention to the importance of inspecting and gauging the various parts of the K valve; also, in order to provide more restrictive tests for the K valve on the test racks, several modifications were made in the Code of Tests (Instruction Pamphlet No. 5039-1) such as: (a) Reducing the maximum allowable resistance in the piston alone and in the piston and slide valve combined; (b) reducing the maximum allowable ring leakage; (c) making the service stability test more restrictive.

These changes were placed in effect September 1, 1944, and if adhered to will result in a reduction of reports of undesired brake applications on freight trains.

Also, to provide more restrictive limitations in the maintenance of the AB valves, the use of the following gauges was recommended, effective September 1, 1944: (a) Gauge for small service- and emergency-piston bushings; (b) gauge for the small diameter of the service and emergency pistons; (c) gauge for the diameter of the emergency-piston bush and selecting proper size rings; (d) gauge for the diameter of the service piston bush and selecting the proper size rings; (e) gauge for the accelerated-release piston; (f) gauge for the vent-valve-piston bush and selecting proper size rings.

Tests of D-22 Valves

Progress is reported in tests of D-22 valves for improved H. S. C. brake equipment on passenger cars and Diesel-electric locomotives. The total number of failures reported to April 30, 1945, on test cars was 104, including failures of the following detail parts: Relays B21, 12, relay F, 10; relays A, 2; D-22 service portions, 11; D-22 emergency portions, 5; slack adjusters, 62; brake cylinders, 11; reservoirs, 1; seals broken, 3. Up to April 30, 1945, 28 cars have been reported for 18-month tests.

From this report it will be noted that while the total number of failures of slack adjusters are highest, it must be remembered that there are four slack adjusters and four brake cylinders to each car compared with one of any other unit. This is submitted for information and a complete report will be prepared after the three-year period with the committee's recommendations.

Corrosion of Air-Brake Parts

The committee, in conjunction with the air brake manufacturers, has been making continuous studies since 1939 of various ways and means to reduce or eliminate the corrosion of air-brake parts, especially on refrigerator cars, where in many cases the parts had to be removed before the expiration of the air-brake cleaning date.

In the early stages of the study of corrosion-resistant paints, the manufacturers established that it would be necessary to discard the use of paraffin for treatment of castings. This was for the reason that paints of the type that were found to be best suited for the purpose, could not be used on a paraffined surface. In their research for a substitute for paraffin for treating castings they located a new material that on a thorough trial proved to be superior to paraffin both from a rust resisting standpoint and a base for paint.

The air brake manufacturers have already changed over to this new treatment for all brake castings.

With the new basic treatment for

castings they were then in a position to change over from the present standard paint to a more resistant paint. They have definitely established what materials are required in a paint having high rust resisting characteristics, and as soon as the materials are available they plan to use them.

In the meantime they have found a substitute paint that tests show to be superior to the paint they are now using, but of course, not as good as the paint they will ultimately use; however, not to defer changing over to the ultimate paint they have decided to use the substitute paint to take advantage of the improvement that can be secured.

The manufacturers advise that this change will not increase the cost of the brake equipment.

Cleaning AB Brakes

Due to prevailing conditions, including the impossibility of taking cars with experimental AB brakes out of service for test and the increasing number of these cars reported for being inoperative, the reports of which do not give complete information, it was agreed that a letter be sent to member roads requesting that brakes on these cars be given periodic attention. Circular DV-1082, dated February 15, 1945, was issued requesting that these cars be given air-brake attention in accordance with Interchange Rule No. 60, furnishing the additional information shown in the circular. After all these cars have received this air-brake attention, a complete report will be submitted.

Braking Ratios for Tank Cars

Consideration has been given to braking ratio for tank cars of heavy construction having high lightweights and used to transport the lighter petroleum fractions. In order to include in the present braking power requirements certain classes of cars having an exceptionally low gross-to-tare ratio, it was recommended that a revision of the last two paragraphs on Page E-12 of the A. A. R. Manual, be made as shown below and recommended as a ballot item.

Proposed Form: On and after January 1, *1946,* all freight cars offered in interchange having single capacity brakes shall have a nominal braking ratio of not less than 50 per cent nor more than 75 per cent of the empty car weight, based on a brake cylinder pressure of 50 lb. per sq. in., except refrigerator cars which shall have a nominal braking ratio of not less than 50 nor more than 60 per cent of the empty car weight, based on 50 lb. per sq. in. brake cylinder pressure. Adopted, 1913; Revised, 1938, 1945.

It is also recommended that Par. (b-9) of Interchange Rule 3 be revised accordingly.

In addition to the above, the following items are among those under active consideration by the committee: (a) Test code for single car test device; (b) charging test for AB valves on repair tracks; (c) gauges for AB valves; (d) standard location for release valve handles; (e) automatic blow down for freight-car release valves.

We also wish to record our appreciation for the assistance given by various manufacturing companies on subjects jointly discussed with them, also for the use of their laboratory facilities.

J. P. Lantelme, general foreman, P. R. R., is chairman of the committee.

Locomotive Construction Report

Standardization of trucks of Diesel switching locomotives is under way — Additions proposed to list of steam-pipe sizes — Recommendations submitted concerning boiler materials, construction

During the past year the Committee on Locomotive Construction has held but two meetings. Its activities have been seriously restricted by wartime conditions; however, several subjects referred to us have been handled by correspondence and others which are now under consideration will be handled in the same manner.

On May 1, 1945, restrictions placed by the War Production Board upon the manufacture of rolled steel wheels for railroad equipment (Order No. L-211) were rescinded. Under this order the manufacturers of rolled steel wheels were permitted to produce only wheels of certain standard designs, and sizes. The manufacturers are still under heavy commitments to our allied countries and to builders of equipment intended for use in those countries. In view of these commitments, manufacturers state they can supply wheels needed by American railroads only by the avoidance of a return to the multiplicity of designs and sizes in use at the beginning of the war.

It is obvious that the interest of both manufacturers and consumers of rolled steel wheels can best be served by the adoption of the smallest number of standard designs and sizes which can be reasonably made to meet requirements. To this end, representatives of this and other committees of the Mechanical and Electrical Sections, A. A. R., are cooperating with duly accredited representatives of the rolled steel wheel manufacturers. Definite progress has been made and it is expected that the work of standardization will be completed at an early date, at which time recommendations will be promptly made for submission to letter ballot.

It is recommended that the item covering additional dry-pipe and steam pipe sizes and the changes in page F-6A of the Manual, be submitted to letter ballot.

The chairman of the committee is H. H. Lanning, mechanical engineer, Atchison, Topeka & Santa Fe.

Oil-Electric Locomotives

The subcommittee on this general subject is following a number of items and submits the following report:

Survey of Diesels and Tabulation of Performance Statistics.—In view of the conditions it appeared impracticable to collect complete information and it was decided to forego the statistics until such time as we can again obtain complete and satisfactory replies to questionnaires on this subject.

Standardization.—To date the subcommittee has studied the matter of standardization of trucks and truck parts of switching locomotives only. The biggest obstacle to complete standardization of the trucks is the traction motor, both as to its physical dimensions and the relationship between the axes of the armature shaft and the axle. Due to the restrictions placed upon the builders of locomotives by W. P. B., it was manifestly impossible to make any material progress during the past few years. The subcommittee, however, proposed to have available for immediately after the war a set of standard trucks complete with traction motors for 44-ton, 600-hp. and 1,000-hp. switchers. To accomplish this the subcommittee will co-operate with a committee on this subject of the A. I. E. E. in an effort to provide a suitable standard traction motor which can be used interchangeably in all locomotives of the above-mentioned fundamental sizes. There are no fundamental differences in the truck arrangements now used on the 44-ton locomotives generally in use, nor on a considerable number of the 600- and 1000-hp. locomotives which would prevent the complete standardization with interchangeability of all principal parts. In fact, three of the larger manufacturers of 600- and 1,000-hp. locomotives now use fundamentally the same truck with such modifications as are required for the motor-nose suspension brackets and the openings for the traction-motor blower ducts. A third large manufacturer uses different trucks, but there is sufficient room in the truck now under consideration to permit installation of this builder's traction motors. It appears, therefore, that there should be no difficulty whatever in designing traction motors with the same general dimensions of the case so that motor-nose suspension brackets will be identical, with identical distance between the center of the armature shaft and the center of the axle, and identical arrangement of the traction-motor blower duct attachment to the truck transom. The standardization of axles for the 600- and 1,000-hp. locomotives presents no serious problem and the truck can be so arranged that railroads who so desire can

use the special journal boxes and bearings developed by one manufacturer of journal boxes and at present used on a rather considerable number of locomotives of these types.

Classified Repairs for Diesel Locomotives.—The subcommittee has been requested to outline a system of classified repairs for Diesel locomotives. At the present writing there seems to be considerable difference of opinion as to the necessity for classifying Diesel repairs since a number of railroads are making such repairs currently on a unit-exchange basis, changing out traction motors, wheels and axles, complete trucks, as well as complete power plants as the occasion demands and in this way keeping such locomotives out of service the minimum length of time. However, for such roads as may desire to classify repairs on this type of motive power, the subcommittee will attempt to draw up a procedure which can be submitted as recommended practice.

Rating of Locomotives.—In cooperation with the Electrical Section, the subcommittee is attempting to draw up a standardized rating of locomotives of all type so that a direct comparison of horsepower can be made between steam, internal-combustion, and electric locomotives. Preliminary meeting of the joint subcommittee has been held but to date only a rough outline has been prepared of a proposed standard rating form to cover the various types of locomotives. This, when completed, will be submitted to the appropriate committees of the Electrical Section and the Locomotive Construction Committee for review before it is finally submitted to the member roads.

The subcommittee chairman is A. G. Hoppe, assistant chief mechanical officer, Chicago, Milwaukee, St. Paul & Pacific.

Dry Pipes and Steam Pipes

In 1943 there was submitted to letter ballot for adoption a list of sizes of steel or iron tubing to be used for making dry pipes for steam locomotives. This list, which was approved by letter ballot, included sizes of tubing suitable for dry pipes applied between the throttle and superheater of the locomotive and, therefore, subject to external pressure tending to collapse the pipe. Throttle valves located between the superheater and the cylinders of locomotives are now common. Therefore, an additional list of dry-pipe sizes for pipes not subject to external pressure is recommended. Recommended changes in page F-6A of the Manual are shown to include these additional sizes. Also included is a 14 in. size in the standard dry pipes for locomotives with pressure.

The subcommittee chairman is L. H. Kueck, assistant chief mechanical officer, Missouri Pacific.

Valves for 300 Lb. Pressure

During the past year the committee had some complaints that the design of the hand wheel as shown on page F-171 of the Manual is not entirely satisfactory because the circular shape and smooth contour does not provide a good grip, and is especially slippery when handled with oily gloves.

The committee is studying the matter, but to afford a remedy in the meantime, it is recommended that the note at the bottom of page F-141 be changed to read as follows:

Note: Hand wheels may be the manufacturer's standard or as specified by the purchaser, provided they properly fit the stem of the standard valve.

The subcommittee chairman is J. E. Ennis, engineering assistant, New York Central System.

Boiler and Firebox Materials and Construction

The 1941 report on locomotive boiler and firebox material and construction showed information obtained by questionnaire to railroads and three builders.

After study of this information, the committee submitted the following recommendations:

(1) *Assembly and Workmanship.*—Boilers should be assembled as free from fabrication strains as possible. This requires that all component parts, particularly the shell courses and connecting sheets be assembled in a workmanlike manner, in order to be free of stresses after riveting is done. Any other procedure will impose unnecessary stresses on parts and contribute to ultimate failure in service and high maintenance costs.

(2) *Thickness of Tube Sheets.*—Thickness of tube sheets should be sufficient to provide the required strength without sacrificing necessary flexibility and heat transfer. Heat transfer is, of course, more important for the firebox tube sheets than for the front tube sheet but flexibility is equally important for both. In order to meet the requirements of strength, flexibility and heat transfer, the following thicknesses of tube sheets are recommended. Front tube sheet, ½ in. on boilers under 75 in. in diameter and ⅝ in. on boilers over 75 in. in diameter; firebox tube sheet, ½ in. for boiler pressures up to and including 300 lb. per sq. in. The radius of the front tube-sheet flange should be not less than 1 in. and not more than 2 in. The radius of the back tube sheet flange should not be less than ¾ in. with riveted construction and 1¼ in. with welded construction. The minimum space between the side of the tubes and inside of crown sheet should not be less than 2½ in. and space between side of tubes and inside of side sheets should not be less than 1½ in. This distance is based on a ½-in. tube sheet with ¾-in. radius. If these dimensions are increased, the space between the tubes and sheets should be increased accordingly. It is preferable to hot-flange sheets and they should be annealed to relieve internal stresses and restore the strength of material after flanging.

(3) *Thickness of Boiler Roof Sheets.*—Maximum allowable working pressures for any thickness of roof sheet to be computed by the following formula:

$$P = \frac{TS}{FS} \times \frac{tE}{R - \Sigma\,(s \times \sin \alpha)}$$

where

P = maximum allowable working pressures, lb. per sq. in.
TS = ultimate strength of material, lb. per sq. in.
FS = factor of safety.
t = thickness of roof sheet, in.
E = minimum efficiency of roof sheet through joints or stay holes.
R = radius of roof sheet, in.
α = angle any crown stay makes with vertical axis of boiler.
Σ = transverse spacing of crown stays in crown sheet, in.
$\Sigma\,(s \times \sin \alpha)$ = summated value of transverse space $s \times \sin \alpha$ for all crown stays considered in one transverse plane and on one side of the vertical axis of the boiler.

The above formula applies to the longitudinal center section 0-0 (see the sketch) of the roof sheet, and in cases where E is reduced at another section O-A, the maximum allowable working pressure based on the strength at that section may be increased in the proportion that the distance X from the roof sheet to the top of the crown sheet at the center bears to the distance Y.

Dry Pipes and Outside Steam Pipes

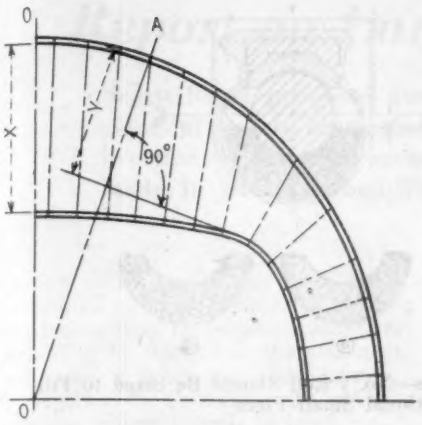
Recommended Practice
Adopted 1922; Revised 1943, 1945

Sizes shown in table below cover recommended sizes of wrought-steel or wrought-iron tubing for dry pipes and outside steam pipes.

Standard Dry Pipes for Locomotives		Dry Pipes Without Pressure	
Outside dia., in.	Ave. thickness of wall, in.	Outside dia., in.	Ave. thickness of wall, in.
3.5	.200	8	.250
4	.220	9	.250
5	.240	10	.313
6	.280	11	.313
7	.313	12	.313
8	.344	14	.312
9	.375	..	...
10	.438	..	...
11	.500	..	...
12	.500	..	...
14	.500	..	...

Material

Steel . . . . . A.S.T.M. Specification A-106.
Wrought iron . . . A.S.T.M. Specification A-72 or standard tubing to recognized manufacturers' specification.



measured on a radial line *OA* through the other section from the roof sheet to a line tangent to the crown sheet and at right angles to the radial line *OA* or

$$P_{max.} = P_{OA} \times \frac{X}{Y}$$

where

P_{OA} = maximum allowable working pressure based on strength at section *O-A*.

(4) *Rate of Increase in Width of Water Space.*—To provide sufficient space for circulation and release of steam, it is recommended that fireboxes be designed so that the rate of increase in the width of water space will be as follows: (a) adjacent to the firebox tube sheet, not less than .5 in. per ft.; (b) near the firebox door sheet, not less than .3 in. per ft.

(5) *Space Between Crown Sheet and Roof Sheet.*—The capacity of the locomotive boiler is limited by its diameter because this determines the gas area of the flues through which all the gases of combustion must pass; in addition it must provide space for the superheater through which all the steam generated must flow. It determines the flue heating surface that can be installed per unit length of flue, the area of the steam-disengaging surface, and the steam volume above the water level in the boiler. This last item is of the greatest importance, and is, in reality, the limiting factor in high-output operation to prevent water carry-over into the superheater and cylinders. In order to provide proper area for steam release and volume without unduly restricting boiler capacity, the space between the crown sheet and the roof sheet at the firebox tube sheet should be not less than .30 *D* nor more than .35 *D*, where *D* represents inside diameter, first course.

(6) *Threads on Firebox End of Rigid Radial Staybolts.*—It is recommended that threads on the firebox end of rigid radial staybolts, if tapered; be tapered 1½ in. in 12.

The subcommittee chairman is F. E. Russell, chief mechanical engineer, Southern Pacific.

Committee on Lubrication of Cars and Locomotives

Roll method of box packing as alternative recommended for letter ballot—Committee wants roller-bearing lubrication research to continue next year

Returns from the survey, made during the year of practices in packing journal boxes, indicate that the one-piece method of packing is followed by the majority of member roads. Under A. A. R. Rule 66, the method of application of the packing has been left optional, although the one-piece method has been set up as preferable since 1938.

The question of recommending the adoption of a mandatory method of packing journal boxes on cars in interchange service has been considered by the committee a number of times during the last several years but the committee has not been able to arrive at any one method which they could unanimously agree to as outstandingly preferable. The committee holds that any of the several methods of packing boxes, when carried out in a workmanlike manner, will give satisfactory results and in our considered judgment, the matter should be left optional as it has been in the past.

Recognizing that the roll method is preferred over the one-piece method by approximately 25 per cent of the member roads covered by the survey, the committee has revised the A. A. R. standard practice, as covered by Par. (b) Rule 66, to include the roll method and show this method by drawing to amplify Fig. 1 in the present standard method of packing made a part of Rule 66. It is recommended that this revision be submitted to the Association as a letter ballot item.

Roller Bearing Lubrication

During the year roller bearing assemblies for 5½-in. by 10-in. journal boxes from the S. K. F. and the Hyatt companies have been delivered to the Indianapolis laboratory and some exploratory work completed with the S. K. F. assembly installed on the testing machine and using stock oils furnished by committee member roads. The work at the Indianapolis laboratory has been carried along by three resident representatives, each spending two days a week while the plant is being operated. The program embraces study and rating of the lubricants on the basis of lubrication, stability and action on the metals. From the work done to date, the indications are that the committee is developing valuable information relative to roller bearing lubricants which it is hoped will permit of recommendations leading to more uniformity of practice and improvement in performance in the field of lubrication of roller bearing equipment on the railroads.

It is recommended that this research be continued during the coming year.

Journal-Box Lids

The study of journal-box lids has been progressed during the year by a subcommittee collaborating with representatives of the Car Construction Committee and the manufacturers. The subcommittee has extended its activity to include a survey of journal-box lids on cars in service along with a check of specimen lids furnished by the manufacturers to the proposed revised specification mentioned in our 1944 annual report.

The work of this subcommittee will

Tabulation Compiled from Monthly Freight Car Hot-Box Statistics as reported by the A. A. R.

Month	Total freight-car mileage				Total car set-outs*				Average miles per set-out*			
	1942	1943	1944	1945	1942	1943	1944	1945	1942	1943	1944	1945
January	..	2,999,962,588	3,293,864,472	3,016,370,744	..	67,760	5,978	8,263	..	386,593	550,999	365,045
February	..	2,865,616,217	3,174,542,468	2,888,302,726	..	8,698	6,442	8,468	..	329,456	492,788	340,966
March	..	3,272,300,869	3,454,052,285	3,430,648,710‡	..	9,067	7,177	9,947‡	..	360,902	481,267	344,893‡
April	..	3,253,014,225	3,342,340,489	3,341,069,956‡	..	8,545	7,274	10,633‡	..	378,452	459,491	314,217‡
May	..	3,412,690,321	3,464,606,409		..	11,598	12,305		..	294,147	281,561	
June	..	3,231,415,378	3,327,747,609		..	19,625	16,619		..	164,658	200,238	
July	..	3,430,981,134	3,443,235,673		..	21,313	16,698		..	160,981	206,206	
August	..	3,462,317,281	3,443,448,023		..	18,296	15,381		..	189,239	223,877	
September†	3,191,618,297	2,401,363,195	3,318,593,893		13,941	12,203	10,967		228,938	278,732	302,598	
October	3,402,371,306	3,475,645,092	3,490,271,418		9,204	7,945	7,813		369,662	437,463	446,726	
November	3,172,846,122	3,222,709,578	3,253,587,840		5,833	5,081	5,078		543,948	634,267	640,975	
December	3,026,680,774	3,182,786,375	3,112,425,198		5,237	4,968	4,877		577,942	667,532	638,184	

*Account hot-boxes.
†Records begin September, 1942.
‡Figures for March and April, 1945, added by the editor.

be carried on during the coming year and recommendations for changes in Spec. M-120—Journal Box Lids, submitted as a letter ballot item as soon as possible.

Packing-Retaining Devices

The committee has continued to study the more promising developments in waste-retaining devices and, based on impact tests of cars equipped with the packing retainer-spring device designated as the Hold-Rite Packing Retainer, as well as service tests on cars of railroads represented on the committee, feels warranted in approving the use of this patented device for the purpose of holding packing in place in the journal box and to assist in prevention of waste grabs.

There are no restrictions as to the use of the device on interchange cars. However, in order to protect and continue in service such devices as have been applied to cars moving in interchange service, it is recommended that a note be included under Rule 66 in the interchange code to provide that this device should be reapplied when in serviceable condition and standard to car, when wheels are changed, journal bearings removed or journal boxes repacked.

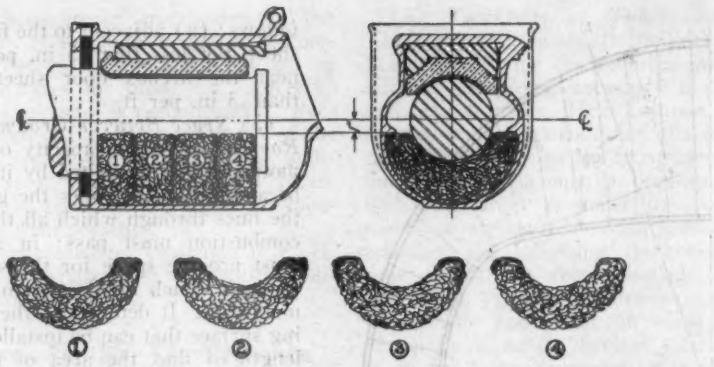


Fig. 2—Roll Method of Packing Boxes—No. 4 Roll Should Be Sized to Fill Without Additional Small Piece

tember 1942 and through February 1945, is presented in one of the tables. This is an extension of a similar tabulation presented in our 1944 report and is here brought up to date as information.

Accidents Due to Hot Boxes

This study is being progressed through the research program being carried out at Altoona, Pa., under the direction of a Committee on Hot-Box Alarm Devices set up in accordance with the inspection of all journals involved in overheatings where journal surfaces and ends of axles show pronounced coloring. It is recommended that Par. 355 (o) of the Standard Rules Covering Wheel Shop Practice in the Wheel and Axle Manual, as made mandatory through Interchange Rule 69, be enforced.

J. R. Jackson, engineer of tests, Missouri Pacific, is chairman of the committee.

Results of Survey of Methods of Packing Journal Boxes

Journal boxes on—	Number of member roads using: One-piece* method	Roll method	Miscel. methods
(1) Locomotive tenders	62	32	2
(2) Passenger equipment cars:			
(a) On-line service	56	30	2
(b) Interchange service	57	29	2
(3) Freight equipment cars:			
(a) On-line service	70	23	2
(b) Interchange service	70	23	2

* With back roll, Fig. 1, Rule 66.

While it is felt no penalty should be provided at this time for failure to renew the spring retainer, it is considered that a note in the interchange code directing attention to the matter will be helpful in maintaining the device in service.

Tabulation of the monthly statements of freight-car hot-box records on all A. A. R. member roads, as compiled by the Secretary's office, starting with September 1942 and through February 1945, is presented in one of the tables. This is an extension of a similar tabulation presented in our 1944 report and is here brought up to date as information.

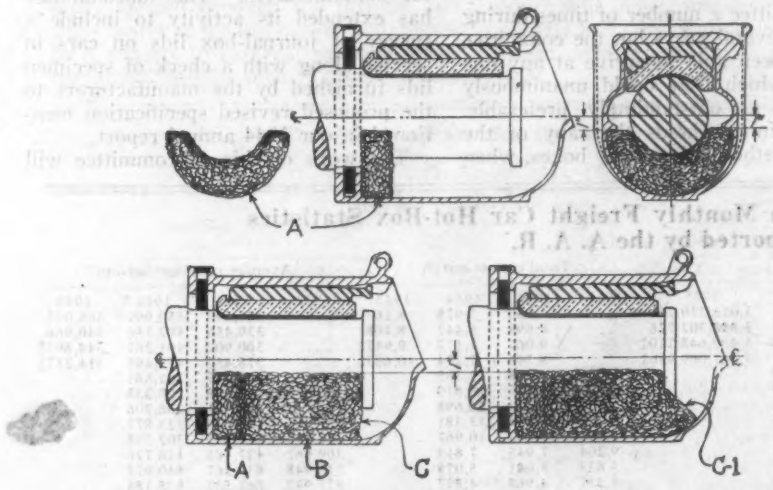


Fig. 1—Proposed Standard One-Piece Method of Packing Journal Boxes

Committee on Loading Rules

The 1945 issue of Rules Governing the Loading of Commodities on Open Top Cars, in addition to incorporating all information contained in Supplements 1 and 2, as well as Sec. (B) of the 1944 report, also includes a number of additions and revisions, whole or in part, namely: Additions, Figs. 21, 79-C, 79-D, 79-E, 79-F and 209-B1; revisions in Rules 3, 4, 5, 6, 9, 10, 12, 13, 15, 16, 21 and Table 2, and in Figs. 6, 6-A, 6-B, 35, 35-A, 36, 43, 65, 65-C, 76, 79, 84-A, 110, 111, 171, 205, 216 and 217.

The following subjects are still under consideration by the committee and will entail revision of present figures and specifications, or formulation of new methods of loading: Lumber, piling, poles, box shooks, girders, bars, plates, sheets, structural shapes, metal tropical huts, wire mesh, machinery, wire rope on reels, boilers, cranes, corn pickers, threshers, tractors, ingot moulds, hot tops, clay pipe, automobiles.

A revision of Special Army Supplement 2 is pending, which will include revisions of existing Figs. A, B, C, D, F, G, H, J and K, and incorporate definite specifications and drawings for the following units: ¼-ton 4-by-4 trucks, single- and double-decked, also in inclined position; truck trailers, 45-ton tank transporter; trailer portion of tank recovery unit; 2½-ton 6-by-6 trucks in steel floored cars; two-wheel cargo trailers; M-4 medium tanks, wire tied; M-26 heavy tanks, wire or rod-tied.

The chairman of the committee is W. B. Moir, chief car inspector, Pennsylvania.

Report on Car Construction

Seven items proposed for letter ballot — Dimensions of coach seats proposed for recommended practice are based on measurements of 3,867 adults made in the Heywood-Wakefield measuring chair

In view of the decision of the General Committee to consider only the recommendations from the various committees pertaining to changes in the standards and rules or other important matters, the report of the Committee on Car Construction will necessarily be brief.

Freight Cars Ordered

Statements covering freight cars ordered during the period May 1, 1944, to May 1, 1945, provisions of Interchange Rule 3 with respect to new designs of freight cars, and box-car side-door characteristics are available in the office of the secretary and will be held in abeyance until the next printed report of the Committee.

Obsolete Truck Side Frames

The continued use of the old T- and L-section cast-steel side frames has been a matter of concern to your Committee for some time. Reports of failures of these designs of side frames are increasing and appear to justify, first, that steps be taken to reduce the load limit permitted in cars so equipped and, second, setting up a future date after which T- and L-section cast-steel side frames shall be prohibited under cars moving in interchange service.

It is recommended that the Interchange Rules be revised to require that:

1—Effective January 1, 1946, the load limit for all freight cars equipped with T- and L-section cast-steel truck side frames is restricted to the nominal capacity of the car and a star symbol (*) is to be maintained at the immediate left of the words "LD LMT." From owners.

2—Effective January 1, 1948, cast-steel truck side frames having T- or L-section compression or tension members, prohibited under all freight cars in interchange.

Welding Couplers from Parts

The Mechanical Inspection Department in its investigation of reclamation practices on the various railroads has found cases where parts of two separate couplers have been brought together and welded to form a complete unit. For example, the major shank portion of one coupler is welded to the head and shank stub of another coupler, after each such detail has been worn out or failed in service.

The matter was referred to the Coupler and Draft Gear Committee who conducted tests and recommended the present emergency welding regulations and limitations for couplers and coupler yokes as set up in Interchange Rule 23. That committee recommended that, although it is felt the welding of O. K. parts from separate couplers to form a complete unit may be successfully performed if properly supervised, a rule should not be provided that will permit this practice as a general proposition.

Your Committee concurs with the recommendation of the Committee on Couplers and Draft Gears and recommends that the Arbitration Committee be requested to add a new sentence to paragraph (C-1) of Section C—Emergency Welding Regulations and Limitations, Interchange Rule 23, to read:

This rule does not permit the welding of parts of different couplers to form a complete unit for application to cars in interchange service.

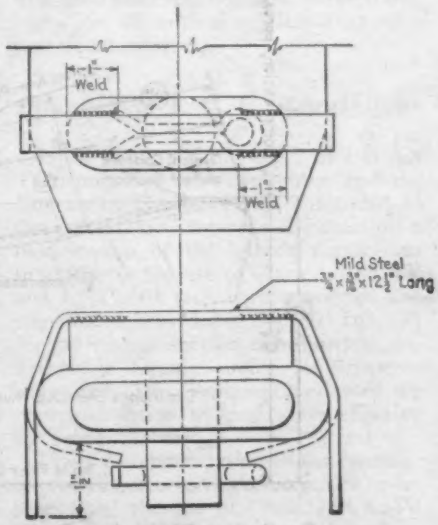
Brake-Beam Lateral Movement

The Committee recommends that the drawing for the loop-type brake-beam hanger shown on page E-6 of the Manual be revised to indicate the depth of the hanger at the center of the top and bottom bar as $1\frac{5}{16}$ in. $+ 0 - \frac{1}{32}$ in. and tapered to $1\frac{3}{32} + 0 - \frac{1}{32}$ in.

This modification is so slight it is felt the physical strength of the hanger will not be impaired to an appreciable extent. The change will permit the beam to float with the wheel and eliminate any lateral force between the shoe and head, thus reducing the wear on the toes of the brake head from this cause.

Draft-Key Retainer Lock

The matter of developing an improved type of draft-key retainer which will prevent the retainer working out and releasing the draft key, causing train separation, has been under consideration by a joint subcommittee consisting of representatives of your Committee and the Committee on Couplers and Draft Gears.



Draft-Key Retainer Lock

The Committee recommends that the method of securing draft-key retainer as submitted by the joint subcommittee be adopted and added to the drawing for Standard Draft-Key Retainer shown on page C-28B of the Manual.

Recommendation by the Committee on Couplers and Draft Gears that another design of draft-key retainer illustrated in the report of that committee be submitted for adoption as an alternate standard, is being studied and will be given further consideration.

Your Committee has also recommended to the Arbitration Committee that a note be added following paragraph (d-3) of Interchange Rule 3, to read as follows:

Note.—On new cars, or on existing cars where location of brake pipe will permit, draft key should be applied from the brake-pipe side of the center sill.

Reason: To facilitate inspection of the draft-key retainer. This recommendation has the concurrence of the Committee on Couplers and Draft Gears.

The Committee recommends that new Note No. 16 be added to the notes now printed on page L-39B of the Manual to read:

Note 16: Refrigerator cars having adjustable bulkheads are to be stenciled to show, in addition to the normal inside length and cubic capacity (based on bulkheads in service position), the maximum inside length and maximum cubic capacity, with bulkheads in extreme end positions. This additional stenciling to be shown in parentheses.

Welding of Car Parts

At suggestion of the Committee on Brakes and Brake Equipment, it is recommended that a new item be added to Section B of Interchange Rule 23 to read:

Reservoirs, Auxiliary and Emergency Air Brake, Cast Iron . . . No welding permitted.

No regulations have been formulated covering welding on coupler draft keys and questions have been raised with respect to building up worn surfaces on this item.

Dimensions for Coach Seats

The report of the sub-committee (at the end of this report) was approved with the understanding that the recommendations contained therein would be submitted for adoption by letter ballot as recommended practice rather than standard practice.

This report has been submitted to representatives of the Territorial Passenger Association for concurrence or comment, who advised as follows: "Our committee has reviewed the report and also inspected the measuring chair used in this study. In addition, we have gone over the process by which the various suggested dimensions were obtained. We are in accord with the report of your sub-committee and suggest it be submitted to the member roads as proposed."

Letter Ballot Items

It is recommended that the following recommendations contained in this re-

port be submitted to letter ballot of the members.

1—Effective dates regarding T- and L-section cast-steel truck side frames.

2—Change as recommended in loop-type brake hangers to provide for taper of the top and bottom bars.

3—Change in method of securing draft-key retainer as covered by sketch.

4—Addition of new note No. 16 to cover dimension markings for refrigerator cars equipped with adjustable bulkheads.

5—Addition of new paragraph to Section B of Interchange Rule 3 to prohibit welding of cast-iron air-brake reservoirs.

6—Addition of new paragraph to Section B of Interchange Rule 3 on the reclamation of draft-gear keys.

7—Adoption as recommended practice of standard dimensions of coach seats.

The chairman of the committee is T. P. Irving, engineer car construction, C. & O.

Subcommittee on Standard Coach-Seat Dimensions

The Sub-Committee on Standard Dimensions for Coach Seats contacted the principal coach-seat manufacturers as to building seats in the future to certain principal dimensions without interfering with their individual product as to design, appearance, etc., and all advised that they are willing to cooperate and that such principal dimension standardization is agreeable to them.

The Heywood-Wakefield Company appropriated a fund to assist in this study of determining such principal dimensions and constructed a special measuring chair, as well as arranged for accurate measurements of individuals under the direction of Dr. E. A. Hooton, head of the Harvard University Department of Anthropology, which specializes in accurate measurements of human anatomy, and who had made similar studies for military authorities and others.

The chair was set up at the Boston & Maine station in Boston, Mass., and the Chicago & North Western station in Chicago, where measurements were taken from 3,867 adult individuals, constituting a reasonable representative sample of the population of the United States, especially that portion of the population which habitually uses railroads. The measurements taken were as follows:

1—The seat was raised until the individual's feet were not in firm contact with the floor. The lower legs were allowed to hang straight down. A seat-length rod was then pulled out until it contacted the uppermost part of the lower leg behind the knee.

2—The seat was slowly lowered until the individual's feet rested firmly on the floor. The firmness was determined by questioning the individual and by grasping one of his feet and attempting to move it. The seat was never lowered so far that the popliteal area (the lower portion of the upper leg just behind the knee) was not in contact with the seat surface.

3—The individual was asked to place his forearm on (and parallel with) the arm rest, which was raised or lowered until the individual's shoulders were level and the angle between his upper arm and forearm was about 90 deg. This position, by the way, was described by the majority as comfortable.

4—The hip breadth was measured by bringing the arms of a calibrated hip-breadth rod together until they contacted the portions of the buttocks or upper thighs expanding to the maximum "spread." Care was taken not to include objects in pockets and enough pressure was exerted to compress the clothing if it was loose.

5—The back height was measured by pulling up a back-height rod and placing the crutch-like end of its transverse arm (at right angles to the rod and extending forward towards the back of the subject's head) at the point of junction between the head and neck. This point, roughly called the nape of the neck, is actually the region of the first and second cervical vertebrae and is easily located in most people, even in women with long hair. During this measurement the subject was, if necessary, asked to sit erect.

6—The shoulder breadth was taken by bringing the arms of a shoulder-breadth rod together until they touched the individual's deltoid muscles (the point of maximum lateral expansion). If the individual tended to hold his arms out from his body, this was corrected by requesting him to keep his arms against his body.

7—The individual was asked to step onto the scales where his height (within ¼ in.) and his weight (to the nearest pound) was recorded. Average weight of all subjects was found to be 152.8 lb. The average height of males was found to be 69 in., and for females, 64.9 in.

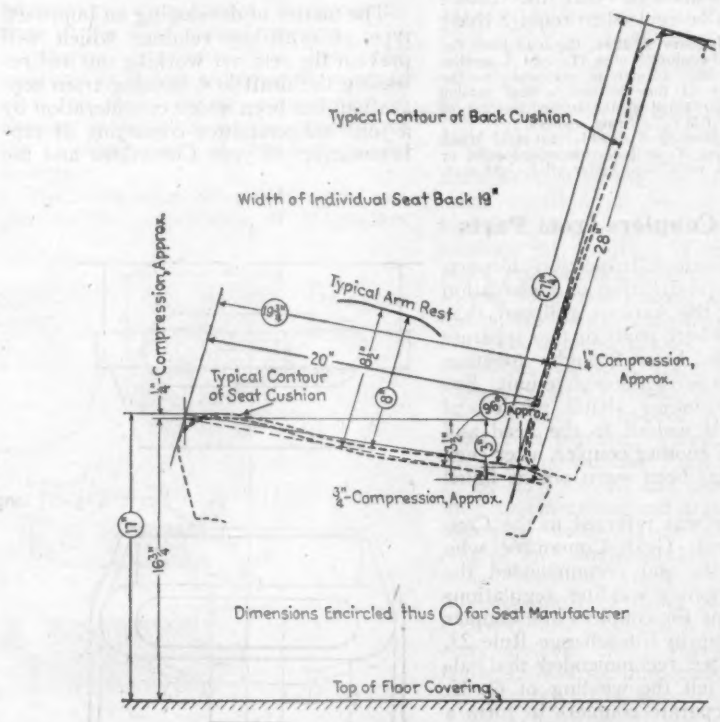
In addition to these measurements, the following was obtained: Age (38.45 years for males and 35.55 for females); birthplace (number of foreign born is proportional to total adult population); type of heel, for females only (12.5 per cent low heels, 52.3 per cent medium heels, and 35.2 per cent high heels); whether or not shoes were habitually removed when traveling by train, for females only (70.5 per cent do not have any desire to remove shoes when riding on train).

In order to make a representative study, an effort was made to:

(1) prevent any age group (as, say, individuals 18 to 20 years old) from becoming greatly superior numerically to the other age groups); (2) obtain an equal number of males and females; (3) obtain people from all economic and social levels.

All information obtained was statistically arranged and the following principal dimensions were determined:

Seat Height.—This is probably the most important measurement and in order to ascertain the distance from the popliteal area to floor (seat height), the thigh could be parallel with the floor and knee should be bent at right angles with all pressure relieved at the popliteal area. It was found that 16¾ in. seat height at the front edge was the most desirable and while this height may be a trifle low for tall people, it is not uncomfortable for short people; whereas a seat too high is distinctly uncomfortable for short people—the long-legged can adjust themselves to this height by resting the feet on the floor forward of the vertical front edge of the seat to the floor. As to slope, a difference in height



Coach-Seat Dimensions Proposed for Recommended Practice

between the front edge and rear portion of the seat at the back cushion intersecting point of 3½ in. was found in the past to be a good general average.

Seat Length or Depth.—Two problems were considered: (1) The long-legged must be accommodated, since a seat length too short results in the underside of the thigh near the knee (the popliteal area) pressing heavily on the edge of the seat. This pressure is highly uncomfortable if maintained for any length of time. (2) The short-legged must be accommodated, since a seat length too long prevents the normal bending of the knee unless the individual sits forward and away from the back of the seat. It developed that a seat length, or depth, of 20 in. would accommodate 90 per cent of all individuals. If the back of the seat is convex because of upholstery, then the seat length, or depth, must be increased correspondingly.

Seat Back Height.—The requirements for this height is that support be furnished at the base of the skull and a height of 28 in. was found to be most suitable. This dimension can be lowered in this way only if a compensating increase in length of seat is made so that tall individuals can slump down.

Angularity of Seat Back.—An angle of approximately 96 deg. was found, in the past, to be a good general average.

Hip and Shoulder Breadth.—Nineteen inches width of seat and seat back was found to be the most practical, which would allow ample space between individuals. It was found that small individuals are as comfortable, or more comfortable, in a wider seat than in a seat the width of which is commensurate with their shoulder breadth. This distance also allows for top coats, padded shoulders, and some degree of movement.

Arm-Height Rest.—The measurement depends chiefly on the proportion of the length of the upper arm to the length of the torso. Thus, a man with a long torso and long arms can have the same elbow height as a man with a short torso and short arms. An arm-rest height of 8½ in. was found to be the most convenient and a higher rest required either an uncomfortable hitching up of the shoulders, or extra lateral space on the seat so that elbows may hang inside the rest.

Allowance for Compression in Seat and Seat Back.—Compression is not a precise problem when humans are involved. Compression depends on the amount of weight applied to the surface to be compressed, the area compressed by the weight, distribution of the weight along the area of compression, elasticity of the cushion, and variation in the compressibility near the supporting frame of the cushion and further from it. Compression figures developed must be considered as general only, as a person does not always sit upright in one defined spot and the slightest shift of weight affects compression. Also, the variations of body builds affect the placements of weights and thus compression.

Other Dimensions Considered.—The table is a summary of the dimensions proposed as recommended practice for future coach-seat construction.

Coach Seat Dimensions Proposed for Recommended Practice

	Dimension required per survey	Correction for compression	Dimension required for seat manufacture	Range of 33 designs of seats*
Seat height at front edge of seat, in.	16¾	¼	17	16 to 18⅞
Seat length, or depth, in.	20	¼	19¾	18 to 21
Seat slope, in.	3½	..	3	3 to 3¾
Seat back height, in.	28	¾	27¼	22¾ to 28½
Angularity of seat back, deg.	96	..	96 (Approx.)	90 to 110
Width of seat and seat back, in.	19	..	19	17½ to 19½
Arm-rest height from top of seat, in.	8½	½	8	5 to 9¾

* Submitted by seat manufacturers and railroads.

Consideration was given to the possible standardization of the following additional coach-seat details, but this was not found practical: shape of seat and back cushions, overall width of coach seats, reclining of seat backs, rotating and reclining mechanism, arm rests, foot rests, seat pedestal, and seat spacing.

The sub-committee wishes to express their appreciation to the Heywood-Wakefield Company in giving their valued assistance in this study.

The chairman of the sub-committe is J. K. Peters, mechanical engineer, D. & R. G. W.

Report of Tank-Car Committee

232 applications for approval of designs and 126 applications for alterations in, additions to, or conversions of tank cars—No formal meetings held

Since the last report, 232 dockets and applications for approval of designs have been submitted, as follows: 87 covered designs, materials and construction of 1,967 new shipping containers, for mounting on new cars or for replacement on existing cars; one application covered the construction of 8 multiple unit cars to be used for the transportation of 15 Class I. C. C.-106A-500 one-ton containers each; 126 applications covered alterations in, additions to, or convertions and reconditioning of 2,165 existing tank cars or shipping containers.

No reports have been received to indicate that any difficulties have been had in the continued use of B. & O. box car 390,000, equipped with four steel-lined wooden tanks; B. & O. box car 390,-050, equipped with five corrugated steel tanks; and 100 car sets of converted air-activated cement containers, in the transportation of authorized less-dangerous petroleum products.

Changes in I. C. C. Regulations

Upon request of the Office of Defense Transportation, the committee and the Bureau of Explosives recommended to the Interstate Commerce Commission a modification of the latter's regulations to authorize the use of Class A.R.A.-IV and I.C.C.-104 tank cars converted and stenciled as provided in Sec. 303 (q) (1) for additional service transporting, inflammable liquids, under requirements suggested. The Commission adopted the recommendation making same effective by suitable order.

Upon recommendation of the committee the Commission by appropriate order authorized the use of Class A.R.A.-IV and I.C.C.-104 cars lacking specification expansion domes, which had required renewal but were not replaced because of inability to secure materials promptly and urgent necessity for prompt return of cars to service, transporting 65 lb. liquefied compressed gas. The order required any such modified cars to have their specification markings supplemented by the term, "Emergency."

To meet an extreme emergency in the production of ordnance and aviation gasoline because of lack of sulphuric acid at certain plants producing the former, the Office of Defense Transportation requested permission to use inflammable liquids cars in limited number, restricted service, and for a definite period to transport acid from its point of production, for not to exceed 25 miles, to the gasoline producing plants. The committee's recommendations for modification of the Commission's regulations, concurred in by the Bureau of Explosives, to relieve the situation and authorize the use of readily available equipment without the necessity for its shopping and alteration, were made effective by the Commission's order, dated January 25, 1945.

Upon recommendation of the committee and the Bureau of Explosives, the Commission by its order of January 25, 1945, authorized the use of frangible discs having a ⅛ in. breather hole in the center thereof to be applied to safety vents of Spec. I. C. C.-103-A tank cars assigned to the transportation of sulphuric acid, as specified, in order to promote safety.

While the committee as a whole has held no meetings since its last report of May 23, 1944, its members have frequently been called upon to serve on numerous subcommittees. These members' reports have been extremely helpful to the committee in disposing by cor-

respondence of the various proposals, applications and dockets requiring its attention.

F. Zeleny, engineer of tests, Chicago, Burlington & Quincy, is chairman of the committee.

Report of Arbitration Committee

Proposed changes clarify some rules and simplify procedures under others—No further extension given for use of welded T- or L-section side frames

During the year Cases 1803 to 1811, inclusive, have been decided and copies sent to the members. Due to increasing failures of truck side frames having T- or L-section compression or tension members, no extension beyond January 1, 1946, is recommended for the requirement in Rule 3 prohibiting application of such welded frames.

With the concurrence of the Committee on Brakes and Brake Equipment, it is recommended that the requirement in Rule 3 with respect to metal badge plates for brake levers be modified to include only cars equipped with AB brakes, to become effective July 1, 1946. With the concurrence of the Committee of Brakes and Brake Equipment, it is also recommended that requirement in this rule covering nominal braking ratio for cars with single-capacity brakes be reduced from 60 per cent to 50 per cent of the empty car weight.

Modification of Rule 17 is recommended to provide in cases of owner's defects that bolts substituted for rivets where rivets are standard to the car shall be classed as temporary repairs, no bill, instead of improper repairs as now constituted.

No extension beyond January 1, 1946, is recommended for the requirement in Rule 23 prohibiting the welding of truck side frames having T- or L-section compression or tension members.

With the concurrence of the Committee on Wheels, it is recommended that a new Fig. 4-D, which is a reproduction of Fig. 130 of the Wheel and Axle Manual, be added to the Code.

An additional paragraph in Section B of Rule 112 is recommended to provide a basis for arriving at reproduction costs for freight equipment cars where definite per-pound prices are not established.

With the concurrence of the Committee on Car Construction, a new paragraph (g) is recommended for addition to Passenger Car Rule 2 requiring approval by the Mechanical Division of new or modified designs of passenger-car trucks.

Addition of new Rule 11 to the Passenger Car Code is recommended to provide for material ordered from the owner for repairs to passenger equipment cars.

The committee does not feel that any of the modifications included in its report necessitate submission to letter ballot.

Rule 3

The committee recommends that effective dates for various requirements in the present rule, as listed below, now set at January 1, 1946, be extended to January 1, 1947:

Section (b), paragraph (9)—Braking power: braking ratio.
Section (c), paragraph (10)—Couplers having 5-in. by 5-in. shanks.
Section (c), paragraph (11)—Couplers having 5-in. by 7-in. shanks.
Section (c), paragraph (12)—Couplers, bottom rotary operated, not equipped with assembled riveted-type lock-lift lever and toggle.
Section (e), paragraph (10)—Tank cars: metal placard holders.
Section (u), paragraph (4)—Class E-3 cars not to be accepted from owner.

The matter of extension in effective dates for requirements involving AB brakes and bottom-rod and brake-beam safety supports is before the General Committee.

The committee recommends that no extension beyond January 1, 1946, be granted in the effective date of the requirement in Paragraph (t-3) of this rule prohibiting the application of welded truck side frames having T- or L-section compression or tension members.

Reason: This requirement has appeared in the rules since August 1, 1938, as result of letter ballot Circular DV-936. Due to increasing failures of these designs of side frames, it is felt no further extension in effective date of the requirement should be granted.

The committee recommends that a new note be added to Paragraph (b-1) of this rule, effective August 1, 1945, to read as follows:

Note: Cars equipped with hangerless-type brake beams, used with Unit trucks, will be accepted in interchange.

Reason: To provide for acceptance in interchange of cars equipped with Unit trucks having hangerless type brake beams.

The committee recommends that Paragraph (b-7) of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: (b-7) Brake Levers: Metal badge plate meeting A. A. R. requirements and fastened to underframe in an accessible location preferably near the air-brake cylinder and on the same side of the car, showing dimensions of the brake levers standard to the car, required on all cars built new or rebuilt on or after August 1, 1929. Effective July 1, 1946, the foregoing requirement will also apply to all cars equipped with AB brakes. From owners.

Reason: It is felt cars in service built prior to August 1, 1929, which have not been equipped with badge plates, are mostly cars with brakes of miscellaneous designs for which it is difficult to standardize on suitable badge plates, and that such cars will be retired from service when conditions permit; and, in the meantime, acceptance of such cars from owners or in interchange should not be prohibited. However, if such cars are equipped with AB brakes, the brake arrangement will be more or less standard and no hardship is created in providing the necessary badge plates. This recommendation has the concurrence of the Committee on Brakes and Brake Equipment.

The committee recommends that Paragraph (b-9) of this rule be modified, as follows:

Proposed Form: (b-9) Braking power: On and after January 1, 1946, all freight cars offered in interchange having single capacity brakes shall have a nominal braking ratio of not less than 50 per cent nor more than 75 per cent of the empty car weight, based on a brake-cylinder pressure of 50 lb. per sq. in., except refrigerator cars which shall have a nominal braking ratio of not less than 50 nor more than 60 per cent of the empty car weight, based on 50 lb. per sq. in. brake-cylinder pressure. In interchange.

Reason: In view of minimum braking requirements having been provided for the loaded car, the 50 per cent minimum will provide adequate braking for the empty cars, as recommended by the Committee on Brakes and Brake Equipment.

The committee recommends that Paragraph (c-12) of this rule be modified, as follows:

Proposed Form: (c-12) Coupler, A. A. R. Standard Type E bottom rotary operated, must be equipped with assembled riveted-type lock-lift lever and toggle E-14 (instead of separate lock-lift lever E-8 and separate toggle E-7), on and after January 1, 1946. In interchange.

Reason: To clarify the intent.

Rule 5

The committee recommends that the second paragraph of Rule 5 be modified, effective August 1, 1945, as follows:

Proposed Form: To justify bill, repairs authorized by defect card must be made within two years from the date of first receipt of car on home line, except wrong repairs, which must be corrected within nine months from date of first receipt of car on home line. However, if wrong repairs of brake beams, brake hangers, brake levers, brake rods, carrier irons, couplers and parts, draft stops, side bearings, door fixtures, bolts in place of rivets, or wrong size bolts or pins, are not corrected within nine months from date of first receipt of car on home line, or not corrected on any line within one year from date of such wrong repairs; counterbill for correcting same is prohibited.

Reason: Car owner should absorb expense of correction after these details have given the specified service.

Rule 9

The committee recommends the following requirement be included in this rule opposite item of Wheels and Axles, R. & R., effective August 1, 1945:

Where axle applied or removed is of tubular (hollow) design, so state.

Reason: To provide the owner with information as to performance of this type of axle.

Rule 10

The committee recommends that the first sentence of the second paragraph of this rule be modified and a new last sentence added to read as follows:

In all cases of multiple-wear wrought-steel wheels, the amount of service metal in the tread must be shown before and after turning, measured from the center of the tread to the condemning line which is located ¾ in. above the measuring point; also show amount of service metal on the other wheels applied, based on full flange and tread contour. It must also be stated whether such wheels have standard full flange and tread contour. This information must be reported to car owners regardless of whether or not repairs are chargeable to owners. For one-wear wrought-steel wheels, see Section (i) of Rule 93.

Reason: To eliminate confliction between Rules 10 and 98.

Rule 17

The committee recommends that the first sentence of Section (d) of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: Bolts substituted for rivets in cases of owner's defects, where [illegible] are considered as temporary repairs, no bill, except where used in securing ladders, ladder treads, handholds, sill steps and uncoupling lever brackets on all cars of all types; also, proper to use bolts for securing coupler and draft-gear supports on tank cars; except, that in no case shall bolts be substituted for rivets which pass through the shell or metal jacket of the tank of tank cars.

Reason: To eliminate the use of defect cards also charges for repairs of this nature.

Rule 19

The committee recommends that no extension beyond January 1, 1946, be granted in effective date of requirement in Item 14 of this rule prohibiting the application of welded truck side frames having T- or L-section compression or tension members.

Rule 21

The committee recommends that Paragraph (c) of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: Rule 21. Bills may be rendered against car owners:

(c) For other temporary repairs at car owners' expense, only when authorized by car owner, except as otherwise provided in Note F of Rule 44.

Reason: To eliminate confliction with Rule 44.

Rule 23

The committee recommends that no extension beyond January 1, 1946, be granted in effective date of requirements in this rule prohibiting the welding of truck side frames having T- or L-section compression or tension members.

Rule 60

In view of Circular DV-1082 dated February 15, 1945, providing the C. O. T. & S. of AB brake equipment on cars stenciled "AB Brakes—Experimental," Note 2 following Section (m) of this rule, reading as follows, has been eliminated.

Note 2: Cleaning periods established for AB type freight-brake equipment are not applicable to cars bearing stencil "AB Brake—Experimental." Such brake equipment must be handled in accordance with Circular No. DV-829.

Rule 63

The committee recommends that Paragraph (4) of this rule be modified by addition of italicized words, to read as follows:

(4) Brake-beam hanger pins, bolts or *brake connection pins*, originally in excess of one inch in diameter, if worn to ⅞ in. or less at any point.

Reason: To provide wear limit for brake connection pins.

New Fig. 4-D

The committee recommends that a new Fig. 4-D, which is a reproduction of Fig. 130 of the Wheel and Axle Manual, be added to the Code. (Present Fig. 4-D to be relocated as new Fig. 4-E and necessary references to be made in Fig. 4-A, Rule 76 and Passenger Rule 7 to harmonize.

Reason: To clarify the intent, as recommended by the Committee on Wheels.

Rule 87

The committee recommends that Section (a) of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: (a) Any company making improper repairs by using material which the repairing line should carry in stock, as prescribed in Rule 122, is solely responsible to the owners, with the exception of the cases provided for in Rule 57. Such improper repairs must be corrected within nine months after the first receipt of the car on home line, to justify the bill. However, if wrong repairs of brake beams, brake hangers, brake levers, brake rods, carrier irons, couplers and parts, draft stops, side bearings, door fixtures, bolts in place of rivets or wrong size bolts or pins, are not corrected within nine months from the date of the first receipt of the car on home line, or not corrected on any line within one year from the date of such wrong repairs, counterbill for correcting same is prohibited. In all cases of improper repairs where defect card is attached to car, a notation to that effect should be made on the billing repair card.

Reason: Car owner should absorb expense of correction after these details have given the specified length of service.

Rule 94

The committee recommends that the first paragraph of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: For repairs made on authority of A. A. R. defect card, the defect card, together with a billing repair card, must accompany the bill, subject to the requirement that repairs must be made within two years from the date of the first receipt of the car on the home line, except wrong repairs which must be corrected within nine months from the date of the first receipt of the car on the home line, to justify the bill. However, if wrong repairs of brake beams, brake hangers, brake levers, brake rods, carrier irons, couplers and parts, draft stops, side bearings, door fixtures, bolts in place of rivets, or wrong size bolts or pins, are not corrected within nine months from the date of the first receipt of the car on the home line, or not corrected on any line within one year from the date of such wrong repairs, counterbill for correcting same is prohibited. In the case of repairs covered by defect card, if the owner changes the original standard of parts so involved, the charge must be no greater than if the original design had been followed.

Reason: Car owner should absorb expense of correction after these details have given the specified length of service.

The committee recommends that the last paragraph of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: No bill shall be rendered for repairs not made. However, where a car reaches home with the defect cards attached under provisions of Rule 112, or with other unfair usage damage covered by defect card, and owner elects to retire instead of repair car, charge may be made for material and labor as would have been required for repairing or renewing items actually listed on the defect card, excluding labor and material for undamaged associated parts except where the allowances in Rule 107 include labor for R. & R. of such associated parts. In no case, however, shall the total bill exceed the

A. A. R. depreciated value of the car, less salvage.

Reason: To simplify the preparation of bills under the provisions of this rule. It is felt the small amount of labor charges involved can consistently be included.

Rule 98

The committee recommends that Paragraph (c-5) of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: (5) Serviceable experimental cored-hub wheels marked "A.A.R.X." when removed from service on account of defect in axle or mate wheel, shall be credited as scrap except when removed on account of Rule 32 or Rule 84 condition in which event second-hand credit must be allowed for such undamaged wheel or wheels.

Reason: Car owners invariably do not desire to have these wheels returned and they are scrapped. This change will eliminate considerable unnecessary correspondence and has the concurrence of the Committee on Wheels.

Rule 107

The committee recommends that preamble to this rule be modified, as follows:

Proposed Form: Rule 107. The following table shows the labor charges which may be made for performing the various operations shown. The labor allowances include all work necessary to complete each item of repairs, unless the rules specifically provide that in connection with the operation additional labor may be charged for the R. and R. of any item which must necessarily be R. and R. in connection therewith.

The labor charges in this rule, as well as Rules 98, 101 and 111, in addition to including the actual labor cost of performing the work, include the following items of indirect expense:

Wages of foremen, assistant foremen, gang foremen, inspectors, clerks, messengers, watchmen, janitors, laborers, etc., working in connection with freight-car repairs.

Proportion of expense of operating power plants, power purchased, shop switching, wages of operators and directors of cranes and tractors, tool-room attendants, machinery oilers, and other facility operators, tools, fuel, lubrication, water, other supplies, etc.

Proportion of salaries and expenses of chief mechanical officers and their office and supervisory forces, regional supervisory and accounting forces.

Proportion of expense of maintenance of facilities (tracks, buildings and machinery) and fixed charges on facilities such as interest, taxes, depreciation and insurance on land, track buildings and machinery.

Workmen's compensation, carriers' taxing act of 1937, railroad unemployment act and vacations with pay.

No element of profit is included in A. A. R. labor charges.

Reason: To more clearly define the elements of costs incorporated in the overhead allowance.

Rule 112

The committee recommends that Paragraph 2 and 3 of Section B of this rule be combined as new paragraph 2 and a new paragraph 3 added, effective August 1, 1945, to read as follows:

2. Where cast- or pressed-steel extensions are used and riveted to metal center or draft sills between bolsters, they shall be considered as continuous. The cover plate may be part top and part bottom, providing the specified length is covered.

3. Where per-pound settlement prices are not provided and the rules specify settlement on reproduction cost basis, cost or reproduction in kind at date of destruction shall be obtained by adjusting the original cost to date by the relation of costs as between those in the year built and in year prior to the date destroyed, on the basis of percentages of costs as issued by Joint Equipment Committee—Costs of Railroad Equipment and Machinery—published by the A. A. R. Finance, Accounting, Taxation and Valuation Department, Washington, D. C.

Reason: To establish an equitable and uniform basis for arriving at reproduction cost of freight equipment cars where per-pound prices have not been established.

Passenger Rule 2

The committee recommends that the effective date of Paragraph (e) of this rule with reference to equipping all-steel or steel-underframe cars with cardboards or suitable receptacles for accommodation of defect and joint-evidence cards, and effective date of Paragraph (f) covering the application of brake-shoe spark shield to passenger train cars having underneath exposed wood parts over wheels, both requirements now being set at January 1, 1946, be extended to January 1, 1947.

Reason: The present situation justified these extensions.

The committee recommends that a new Paragraph (g) be added to this rule, effective August 1, 1945, to read as follows:

(g) No car equipped with trucks of an untried type, whether trucks are built new or existing trucks with construction substantially changed, shall be offered or accepted in interchange, nor accepted from the car owner, until such trucks have been approved by the Mechanical Division of the A. A. R.

Reason: To require approval of new or modified designs of passenger-car trucks, in connection with revised definitions for passenger-train cars adopted by letter ballot this year. This recommendation has the concurrence of the Committee on Car Construction.

Passenger Rule 7

The committee recommends that the third sentence of Paragraph (e-1) of this rule be modified by the addition of italicized portion, effective August 1, 1945, to read as follows:

Axles standard to the car must be maintained, *except the 1940 A. A. R. standard passenger-car axle may be substituted for the former standard axle, charge and credit to be on basis of material applied and removed. In case of handling-line responsibility, betterment charge may be made for the 1940 A. A. R. standard passenger-car axle on basis of its second-hand value. When former standard is substituted for the 1940 standard, proper charge and credit must be made and defect card issued for labor only.*

Reason: To provide for substitution of 1940 A. A. R. standard passenger-car axle and charges and credits in connection therewith.

The committee recommends that Section (f-12) of this rule be modified, as follows:

Proposed Form: (12) Thin Rim—Wrought-steel wheels: If the tread is worn so that tread thickness is 1 in. or less. See Fig. 4.

Steel-tired wheels: If tread is worn to within ¼ in. of measuring line (inside edge of limit-of-wear groove) as shown in Figs. 1, 2 and 3.

Service metal and tread thickness of wrought-steel wheels shall be measured by the A. A. R. Standard steel-wheel gage or its approved equivalent, applied as shown in Figs. 4-A and 4-D of the freight code, with due consideration to 1 in. thickness condemning limit for passenger car service.

Reason: To clarify the intent as recommended by the Committee on Wheels.

Passenger Rule 11

The committee recommends that new Rule 11 be added to the passenger code, effective in the August 1 supplement, to read as follows:

Rule 11. Material ordered from car owner shall be handled as outlined in Rule 122 of the freight code.

Reason: To clarify the intent with respect to material ordered from owner for repairs to passenger cars.

Passenger Rule 22

The committee recommends that first and second paragraphs of third note following Item 60 of this rule be modified, effective August 1, 1945, as follows:

Proposed Form: Note: Material not listed above, but listed in Rule 101 of the freight-car rules (if same as that used on freight car) shall be charged at prices shown in Rule 101. All other material to be charged at net store-department cost.

Reason: To clarify the intent with respect to material ordered from the owner for repairs to passenger cars.

J. P. Morris, general mechanical assistant, Atchison, Topeka & Santa Fe, is chairman of the committee.

Report of Committee on Wheels

Studies of chilled-iron wheels with flange-supporting brackets continue—Reduction in range of carbon content in wrought-steel wheels proposed

In view of the unusual conditions this report is confined to items of unusual importance or those requiring letter ballot or other formal action.

During August, 1944, the committee authorized the manufacture of 150,000 chilled-iron wheels of 750 lb. nominal weight and 50,000 chilled-iron wheels of 850 lb. nominal weight, according to the so-called 1942 design submitted by the Association of Manufacturers of Chilled Car Wheels under date of August 14, 1944. This design incorporates changes in the contour of the flange and in the flange-supporting brackets which should materially reduce flange failures. The design was first cleared with the Track Committee of the Engineering Division. The wheels are to be marked "AAR-X" for identification.

Continuing its study of service behavior of chilled-iron wheels, the committee has arranged to collect data on wheel failures by questionnaires sent to a selected group of railroads. As a consequence of these studies, certain changes in the interchange rules have been recommended which will tend to restrict the use of the single-plate non-bracketed design of wheels. These changes were submitted to the membership in Letter Ballot Circular DV-1087, dated May 21, 1945. The studies are continuing.

The matter of maximum carbon in wrought-steel wheels with reference to question of relationship of high carbon to wheel failures has been under study and factual data secured from a selected list of member railroads. This survey indicates the majority of wheel failures on untreated wheels to Specification M-107 are in the upper carbon range. It is recommended that the requirement for carbon content shown under Paragraph 5—Chemical Composition of Section II in Specification M-107 be reduced from the present range of 0.87—0.82 per cent to a range of 0.65—0.77 per cent; also, that Paragraph 8(b) of Section III in the specification be modified by eliminating the underscored portion as shown below:

8(b) When so specified in the purchaser's order, wheels of each type and rough bore diameter shipped in any one carload lot shall be so selected as to permit mating and mounting within a five-point carbon range according to the carbon content stamped on the wheels, *i.e., 67-72, 68-73, 69-74, 70-75, etc., the preferred group ranges being from 70-75 to 75-80.*

These modifications have the concurrence of the Committee on Specifications for Materials.

In order to provide a wheel circumference gauge suitable for use on larger sized wheels, a new gauge covering wheels from 38 to 52 in. in diameter has been authorized subject to letter ballot approval.

An extensive revision of the Wheel and Axle Manual was undertaken during the year and those changes requiring formal approval by the membership have been submitted to letter ballot.

In the annual report dated May 23, 1944, the appointment of a qualified inspector by the association to check wheel-shop practices was suggested. During the intervening year this work has gone forward and the inspection has been effective in disclosing practices requiring improvement.

Some of the conditions disclosed have indicated the necessity of strengthening and extending the mandatory requirements of Section XX of the Wheel and Axle Manual, Letter Ballot DV-1087 covers the changes recommended by your committee. These changes will facilitate the improvement of wheel-shop practices.

The chairman of the committee is C. B. Bryant, assistant to vice-president, Southern.

* * *

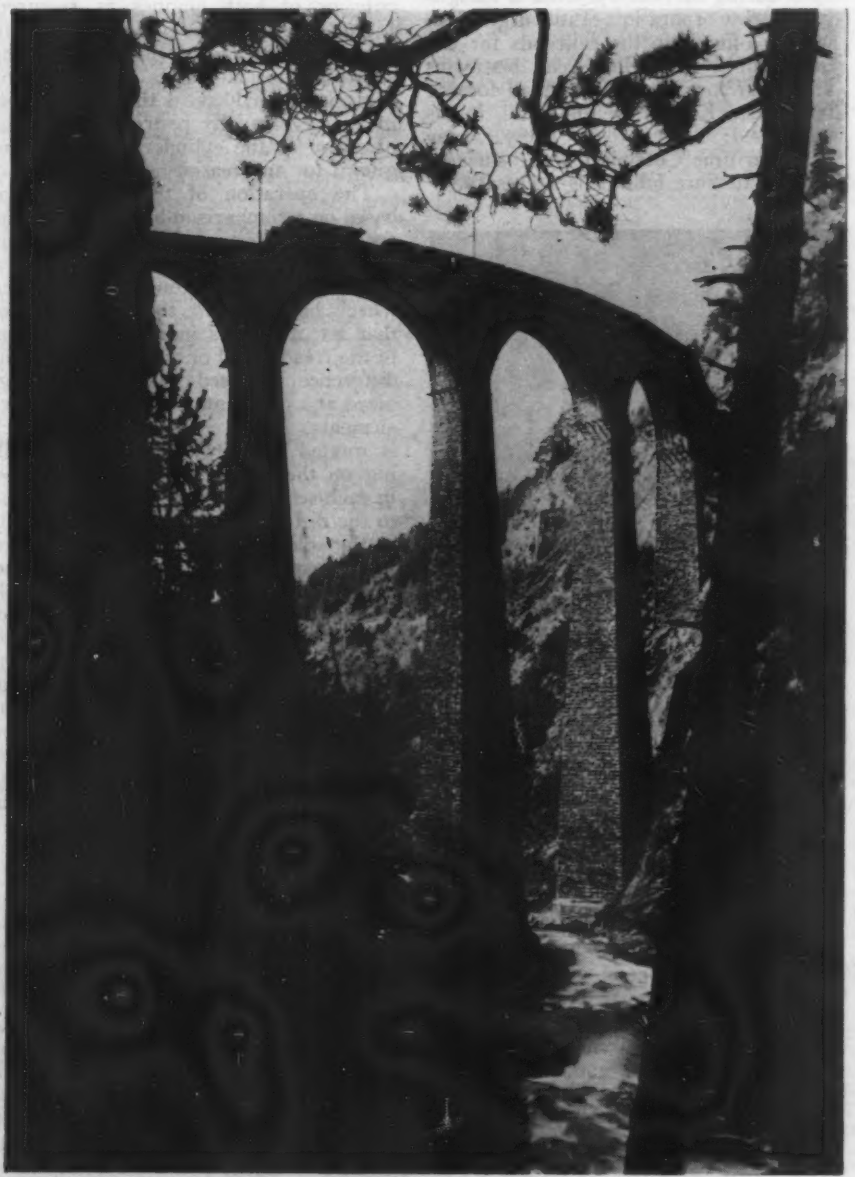


Photo by E. Meerkamper

Landwasser Viaduct in Switzerland

One of the viaducts which with numerous tunnels distinguish the Rhaetian Railway, an all electrified meter-gage (39.37 in.), line located in the mountainous Grisons canton. The Landwasser viaduct, between Alvaneu and Filisur, is 426 ft. long and 213 ft. high. Each of its six arch spans are 66 ft. long and the viaduct is on a 17 deg. 30 min. curve.

CAR AND LOCOMOTIVE EQUIPMENT DEVELOPMENTS

Checker-Surfaced Rolled-Steel Plates

A rolled-steel checker floor plate developed during the war by Jones & Laughlin Steel Corporation, Pittsburgh, Pa., will be offered to the railroads for use in locomotive deckings, car platforms and other locations where good footing is needed. Known as Jol-Tread, it has been used widely by the Navy, Army and Maritime Commission for surfaces where safe sure footing is necessary.

Good Footing Is Provided in a Safety-Surfaced Steel Plate

Automatic Control Of Driving-Wheel Slip

The American Brake Shoe Company, New York, has developed a control device for locomotives which is of particular interest in connection with the duplex type of steam engine although it may be applied to locomotives having single sets of cylinders. The purpose of the device is to control slippage of locomotive driving wheels. When slippage of driving wheels begins, the device automatically closes circuits to solenoid-operated valves that function to restrict passage of steam to the cylinders of the slipping engine. When slippage has been stopped the device again permits free passage of steam to the cylinders. The device has no effect on the performance of the locomotive except when slippage occurs. A signal light in the cab indicates when the automatic control is restricting the steam passage. Under the usual slippage conditions there should be no need for the engineman to change his throttle position.

The slip control as applied to 26 duplex locomotives is designed to reduce steam to the cylinders of one engine only or of both engines as required. Lighted signal lamps indicate to the engineman which set of drivers is being controlled for slippage. A push-button control is provided so that the engineman may manually restrict the passage of steam to the cylinders of either engine if for any reason he cares to do so.

The operation of this controller is based on a comparison between the tread speed of one set of driving wheels and the tread speed of the other set of driving wheels. Should one set of driving wheels begin to slip, the tread speed of that set of drivers increases in relation to the tread speed of the other set. This difference in speed is instantly recognized at a differential switch having two elements. Each element of the switch is rotated by a friction drive unit rolling on the tread of one driving wheel in each set. The relay panel, in response to the differential switch, closes circuits to the solenoid valves, thereby restricting steam to the slipping engine. Should the other set of driving wheels also begin to slip, the control will function to restrict steam to that engine the instant its speed exceeds that of the other. The control is so sensitive that it is practically impossible for the sets of driving wheels to slip to any extent without producing a controllable difference in tread speed. This is true even though the drivers may start to slip at the same instant.

Journal-Box Packing Waste

The Miller Waste Mills, Inc., Winona, Minn., has developed a journal-box waste, known as Millerpax, which is designed to minimize waste grabs, waste wipes and rolling of packing and to assure the transmission of lubricant to car and locomotive journals under adverse conditions incident to modern high-speed operation.

Using special machinery of Miller design and construction, the new waste is made by three processes combined in one: The first operation removes any foreign matter, including grit, metal, wood, paper, etc., which the manual sorters may have missed; the second subjects the threads to an air-wash which thoroughly removes short ends and lint; the third definitely interweaves the threads into an almost endless mass which is best shown by the accompanying illustration. A new plant for the manufacture of this product is now under construction.

Long Interwoven Fibers Characterize Millerpax Journal-Box Packing

In connection with waste grabs, the interweaving of the new packing tends to prevent small segments of waste leaving the main body of the packing and getting between the bearing and the journal. Waste wipes are reduced by the air-wash process referred to, the removal of practically all free lint and short ends, as easily demonstrated by a comparative dry shake test, assuring uninterrupted flow of oil to all parts of the bearing. The rolling of packing is retarded by the interweaving process which effectively ties the entire mass of waste into one firm body and thus substantially reduces the usual shifting of packing.

This packing has been used by one of the principal rail carriers for the last year in passenger-car and locomotive service and other railroads have made

service tests during the last six months. Equipment used in manufacturing the packing is so designed that any railroad specification can be met for all-wool packing, all-cotton packing, or any combination of the two. If resilient fibers are specified they can also be included.

The distribution of Millerpax is being handled by the Nash-Finch Company, Minneapolis, Minn., exclusive railroad sales representative for Miller Waste Mills, Inc.

Zinc-Coated Steel

A special paint-preserving zinc-coated sheet steel is one of the newest metals used for freight-car roofs and side panels, and for various passenger-car parts. This coated steel, a product of the American Rolling Mill Company, Middletown, Ohio, is known as Armco Zincgrip. It has a protective full-weight zinc coating that does not flake or peel in severe forming operations. Its mill-applied Bonderized surface treatment acts to insulate paint from the zinc. This neutral painting surface helps preserve the oils that keep paint flexible and prevents early peeling and flaking.

Tests have shown that paint lasts several times longer on it than on ordinary galvanized or sand-blasted steel. Paint clings tightly to the surface, providing better resistance to the abrasive action of cinders, dirt, smoke, and sand thrown against roofs and sides of cars.

In severe fabricating operations this special steel is said to have many advantages. The full-weight zinc coating remains intact, giving complete protection on sharp bends and corners, as well as the flat surfaces of cars.

This Zinc-Clad Steel Plate Forms Well Without Cracking of the Coating

Synthetic Airfoam

Two important developments in foamed latex for seating in railway cars include the War Production Board's recent action in removing restrictions on the use of this material for new cars and the announcement of successful efforts by the Goodyear Tire & Rubber Co., Akron, Ohio, in producing a synthetic rubber Airfoam. This material is said to be equal, and in some respects superior, to the pre-war natural rubber product, which was widely used and gave highly-satisfactory service, not only for passenger-car seat cushions and carpet padding, but for crew seats, arm rests, etc., in locomotives.

Among advantages claimed for the new synthetic-rubber Airfoam are greater flex life and aging characteristics and increased resistance to oil. In one laboratory test of the new foamed latex, it was subjected 250,000 times at a rate of once per second to a pressure which compressed it to 50 per cent of its total thickness. At the end of the tests, the synthetic rubber Airfoam showed no loss in resilience. In another test, latex cushion material was subjected to an aging test for 30 days in a Geer oven at 158 deg. F., again with no appreciable change in the product. Still another test involved placing a section of synthetic rubber Airfoam in an "air bomb" at 260 deg. F. and at 60 lb. air pressure. Even under these conditions, the synthetic rubber product resisted any tendency to change shape or become hard, soft, or tacky.

Synthetic-rubber Airfoam is adaptable to the many sizes and shapes required for seat-cushioning purposes on different railroads, although standardization to some greater degree than at present would have a definite tendency

Synthetic Airfoam Seat Cushions Undergoing Final Inspection

to reduce manufacturing costs and the price to consumers. The fact that cushions can be produced in any thickness and shape desired eliminates the need for spring or other types of support between the foamed latex and the ventilated plywood or metal sheeting to which it is usually applied. The compression, or load-carrying capacity of the material can be varied by controlling the amount of air combined with the latex in mechanical whipping and thus secure any hardness desired within a fairly wide range.

Foamed latex cushions tend to dampen out any vibration transmitted through the car structure and, by making easy, automatic adjustment to every contour of a passenger's body, permit complete relaxation without sense of strain or fatigue even on long journeys. The material also contributes to comfort by carrying off heat and moisture in forced-air circulation through the cell-like structure. Airfoam, as developed in the new synthetic form, is easily applied in seat cushions; requires practically no maintenance expense; provides a soft base for upholstery fabrics, thus increasing their service life; is dustless and tends to repel germs, moths and vermin and, when necessary, may be easily washed with soap and water without damaging the material.

Vapor Zone Control

The design of post-war passenger cars will unquestionably aim at providing maximum travel comfort for every passenger, and investigations conducted by the Vapor Car Heating Company, Inc., Chicago, indicate that this requires due consideration of the different zones in a car if passengers are to enjoy temperature comfort no matter where they sit in the car.

Temperature zoning takes into consideration the fact that the sunny side of a car may be 8 deg. F. higher in

temperature than the shady side. In the heating season, separate thermostatic control on the sunny side of the car and the shady side make it possible for the car heating system to furnish only the exact amount of heat required and thus avoid over-heating or under-heating due to the effect of the sun and the shade.

Another zone which affects temperature comfort is at the car end opposite the air-conditioning return grill where cool or cold air may be drawn into the car when the door is opened. This cold air, if drawn past passengers in the first seats of a coach, for example, results in considerable draft at that point; therefore, a separate thermostatic zone in this end of the car contributes greatly to passenger comfort.

The women's and men's lounging rooms, provided for comfort, are entirely separated from the body of the car and thus affected by temperature conditions different from those in the rest of the car. Plainly, the heating temperatures in these rooms must be controlled separately to insure full comfort.

In the past, it has been difficult and somewhat costly to provide the separate zones of heating, but with the Vapor heating system, designed for post-war cars, each additional zone inside the car will be heated by simply running a single radiating unit to the space being controlled and connecting it to a valve operated by a thermostat in that space.

The objective of this development is to supply zone heating which will keep all passengers comfortable regardless of the position which they may occupy in the car.

Locomotive Injector

The Edna Brass Company, Cincinnati 2, Ohio, has introduced a series of single-lever-operated injectors for locomotive use, which have capacities up to 15,000 gal. per hr. Known as the Type-J injectors, the three models in the series will grade from a maximum to a minimum of 65 per cent of rated capacity efficiently, without loss of water or steam. They will pick up feedwater having a temperature of 140 deg. F. and deliver water to the boiler at 300 deg. F. They will completely drain a tender and restart themselves if the steam or water supply is interrupted momentarily.

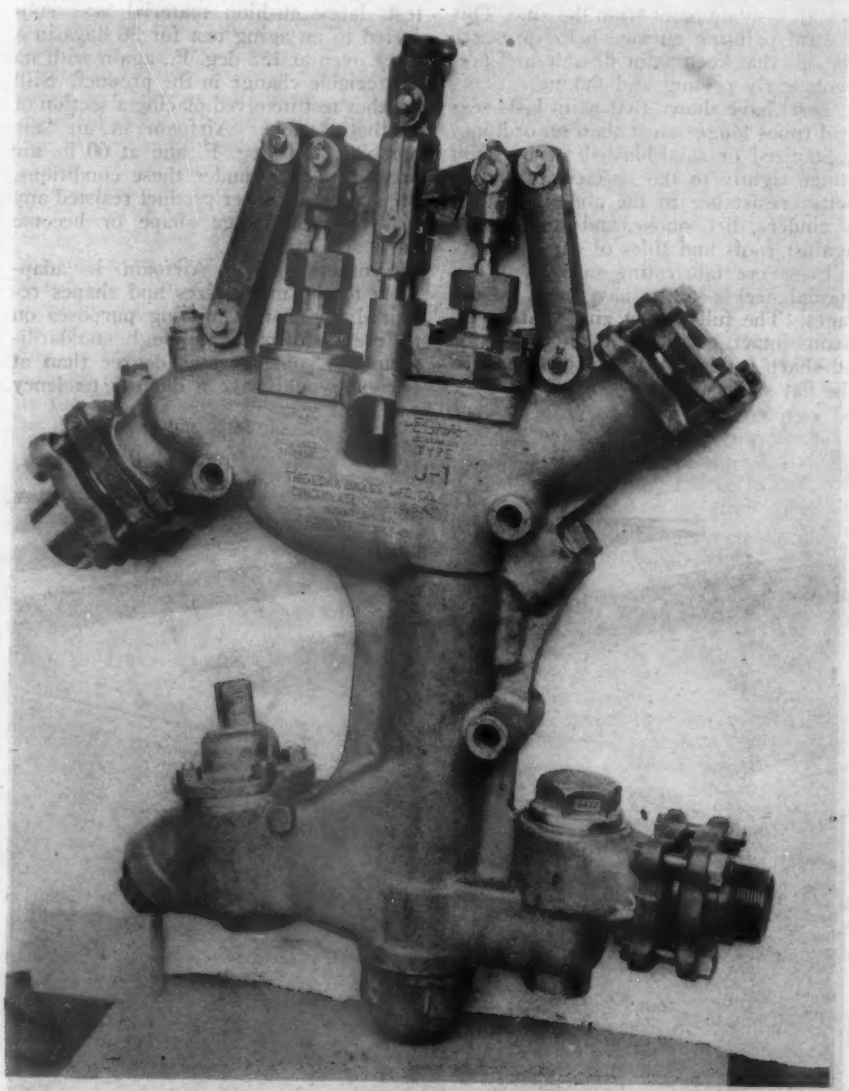
The single-lever mechanism permits maximum grading and ease of operation and makes positive the opening and closing of the water and steam valves at all times. The water valve always opens before the steam valve. The overflow arrangement on these injectors is fully automatic, but they are so arranged that they can be furnished with a combination automatic-manual control. If the single-lever control is not desired the injectors can be supplied equipped with a double-post cab stand, which permits manual control of the steam and water valves.

These injectors may be applied without change on either the right- or left-hand side of the locomotive. The cab lever is universal and can be used for either mounting. The delivery-line check is built into the injector, but is readily accessible. Neither the injector nor the cab lever interfere with clear vision for the engineman. Provision is made for a connection for an alarm valve if the use of one is desired.

Lubrication and Bearing Refinements

As a result of laboratory research and improved manufacturing methods, the Magnus Metal Corporation, Chicago, has developed a number of refinements in the journal lubricator, journal bearings and motor support and armature bearings made by this company. The capacity of the oil supply to the Magnus journal lubricator has been increased and made more uniform and continuous by improving the fabrication of the lubricating pads and wicking to deliver oil to the top of the cotton-wool pad which has a ¼-in. nap, thus assuring a lower

Magnus Journal Lubricator Fabricated to Increase the Delivery of Oil to the Top of the Cotton-Wool Pad



Single-Lever-Operated Injector with a Capacity of 15,000 Gal. per Hr. Delivery at 300 Deg. F.

running temperature and longer bearing life.

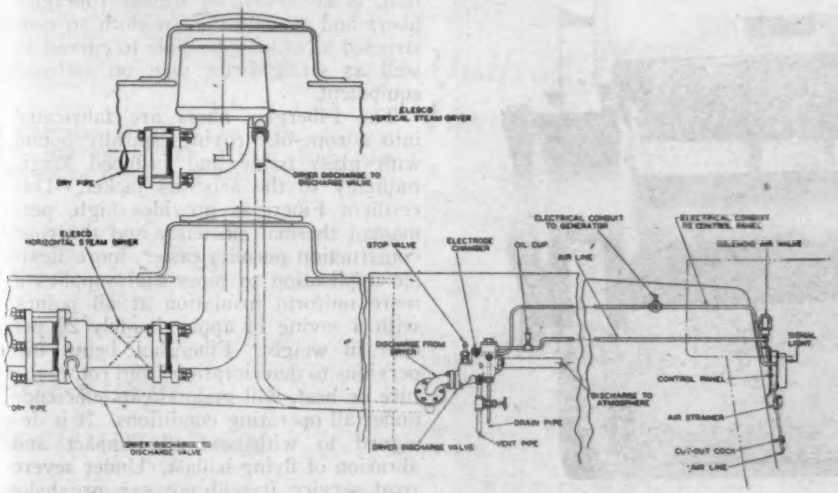
New machinery and methods used in the manufacture of journal bearings include (1) an extremely accurate hardness testing machine which assures the rejection of any metal not fully or uniformly up to the requirements, (2) a new type broaching machine for broaching bearing linings, including fillets, to a better, satin-smooth finish. Heat, friction and wear on bearing and journal are thus reduced. In addition, a new method of pressure application of lining metal is being developed which is designed to make a denser and more uniform lining, and assure a much stronger bond between the lining and back of the bearing.

New equipment has been added in order to supply completely finished bearings for motor support and armature bearings in addition to other similar applications.

The quality of journal bearings and locomotive castings is said to be stepped up by (1) improved methods of preparing and handling sand molds, (2) by the installation of new, more efficient sand renovating equipment, and (3) by automatic heat control of the solder, babbitt and Satco-metal kettles.

Steam Dryer Has Automatic Discharge

The carry-over of water and solids with the steam in locomotive operation is discharged by an automatic valve introduced into the Elesco Steam Dryer System by the Superheater Company, New York 17. Tests of applications have disclosed that a heavy carry-over of water, which would otherwise have entered the superheater, is ejected to the ground. Normal steam temperatures are maintained with protection to superheater units, throttle valves, valve and cylinder rings. The valve is automatic in operation.

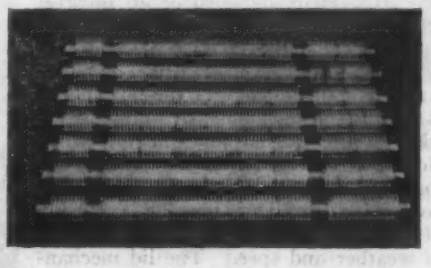


Arrangement of Automatic Discharge Valve in Steam Dryer System

General-Purpose Radiation Units

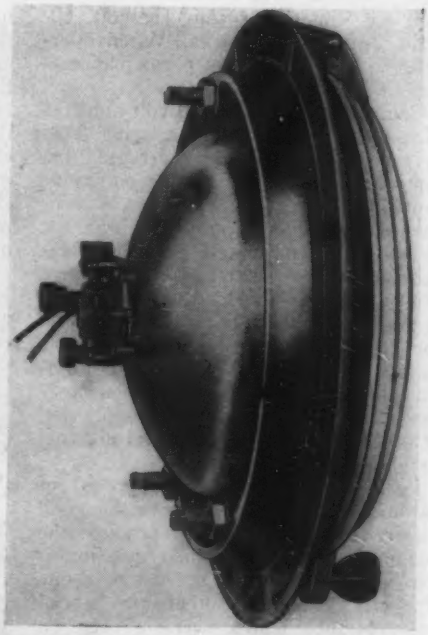
For some years past, Wilson Engineering Corporation, Chicago, has been furnishing iron directional radiation elements with integrally cast fins, for use in locomotive compressed air systems, shop bake ovens, and for car-yard compressed-air radiation. This radiation element may be mounted in any position without pocketing of static ambient air. In some adaptations, for instance, in Diesel-electric locomotives, the weight of cast iron has some disadvantages.

Copper and aluminum are now again available, and a new type of radiation has been designed and developed by this company, to use these materials, in either high- or low-pressure service. The new radiation elements consist of suitable-strength copper tubing, combined with finned aluminum sections, to provide elements of any reasonable length. These radiation elements do not have the full advantage in vertical installation for radiation to static ambient air of the earlier types, but they are fully effective when installed horizontally. They also lend themselves to use in any position with blown air, as in Diesel engine jacket cooling or compressed-air cooling.



Radiating Units Made Up of Copper Tubing and Finned Aluminum Sections

The new radiation is adapted to the highest pressures required in locomotive practice and is lighter installed than earlier types of piped radiating units.



Headlight Designed for Flush Mounting on Streamline Equipment

LocomotiveHeadlight

Headlights designed for practically flush installation on streamline equipment are manufactured by the Electric Service Supplies Company, Philadelphia, Pa. Known as Golden Glow, they are equipped with non-deteriorating glass mirror reflectors which are readily cleaned and afford continual maximum intensity of beam. The reflectors are permanently attached to the door frame which does not permit training, but three mounting lugs are provided to make it possible to adjust the light for proper direction. Focusing devices are available or a socket can be furnished for use with prefocused lamps. The headlights are built for use with 100- to 250-watt, 32-volt, concentrated-filament headlight lamps up to and including P-25 size. They are equipped with gold glass reflectors unless silver or crystal are specified particularly.

Motor-Alternator For Passenger Cars

The Westinghouse Electric Company, Pittsburgh 30, Pa., has developed a motor-alternator designed for use on railroad passenger cars to convert direct current into alternating current for fluorescent lighting and other appliances operating from a.c. power such as electric razors, water coolers, and Precipitrons. It is an entirely self-contained unit arranged for mounting on the car underframing and has been designated as the Type XF-21 Motor Alternator.

The unit converts the nominal 64-

volt, d.c. car power into 118-volt, 60-cycle, 3-phase a.c. power. When operating in this service its performance is said to be:

Continuous rating, 4,200 volt-amperes with a d.c. supply voltage ranging from 55 to 90 volts; frequency regulation, approximately plus or minus one cycle from no load to full load at any constant d.c. supply voltage between 55 and 90 volts; approximately plus or minus two cycles over the full operating range from no load to full load with variation in the d.c. supply voltage from 55 to 90 volts; a.c. voltage regulation, allowable voltage variation is from 110 volts minimum to 125 volts maximum when operated from 55 to 90 volts d.c. supply and at any load up to full load; and nominal speed, 3,600 r.p.m.

Performance meets the approval of the lamp manufacturers as to the rigid requirements necessary to produce the maximum lamp life. The regulation is also satisfactory over the entire range of operation for any other commercial a.c. appliance which may be used on passenger cars.

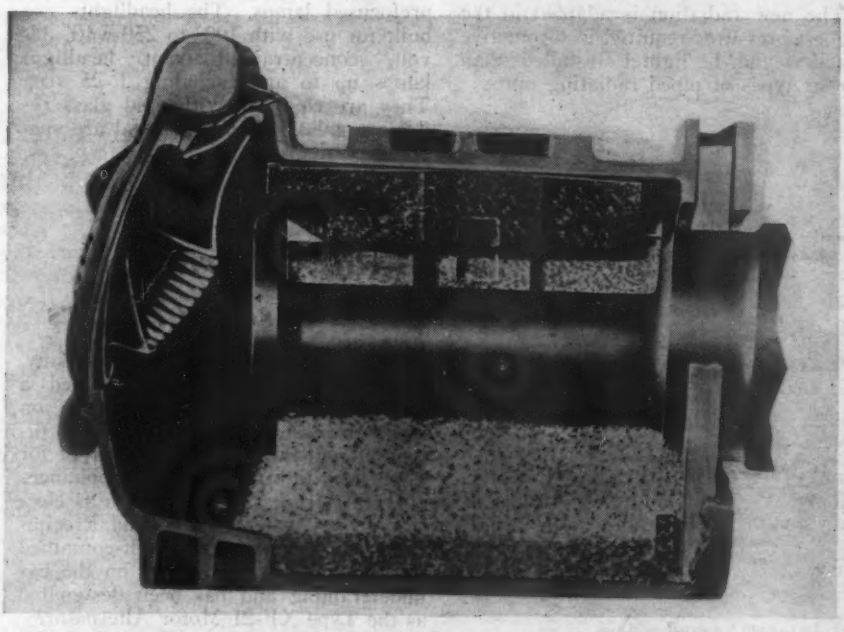
The construction of the motor-alternator includes those basic features which have been demonstrated to be essential for satisfactory operation in railroad service. The operating speed of 3,600 r.p.m. allows a considerable saving in weight, compared with a slower-speed unit. All rotating parts are balanced to insure smooth operation, freedom from vibration, and long life. Provision is made for flexible mounting. The commutator and brushes are of ample size to insure long life, low maintenance and good commutation. The brushes and brush-holders are arranged for ready access. The two ball bearings which carry the two armatures are over-sized and arranged for gun type lubrication.

The a.c. voltage and frequency control apparatus furnishes rectified alternating current for varying the fields of the motor and generator. The control consists of three small transformers, three copper-oxide rectifiers, and three resistor tubes. A small Spencer-type thermostat disk, similar to those used in electric flat irons, is mounted in the motor-generator set and shorts a resistor when the set attains a near normal temperature to correct the speed and frequency for temperature change.

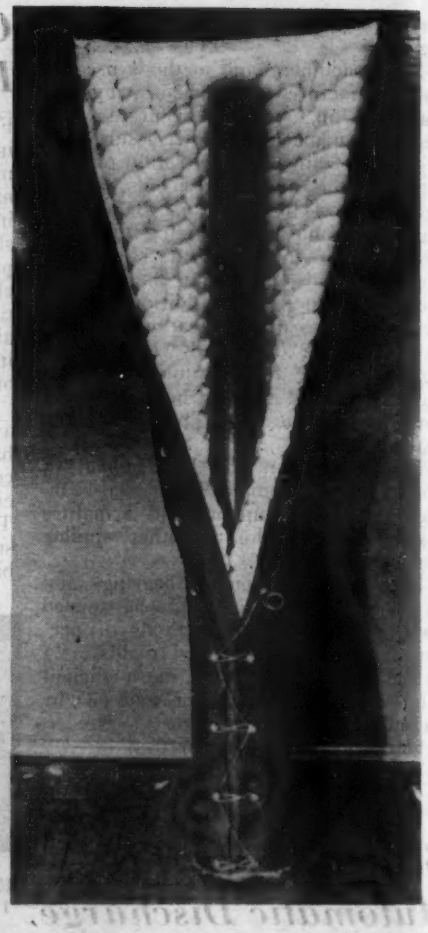
The control after being adjusted at installation should require no further attention or maintenance other than reasonable cleaning and inspection.

Journal-Box Lid Is Sealed Against Dirt

The National Malleable and Steel Castings Company, Cleveland 6, Ohio, has designed a journal-box lid with a dirt-deflecting strip, included as an integral feature. The lid is round instead of square so that the lid face and the box mouth can both be machined if it is desired. About the edge of the box mouth is an upstanding flange, overlapping the edge of the lid, so that the lid, when closed, is recessed into the box. This, together with accurately fitted lid and box faces, provides for the exclusion of dirt and water under all conditions of weather and speed. The lid mechanism is of the National No. 3 coiled-spring type, in which the lid is pulled inward directly against the box mouth. The lid operating parts are all inside the box where they are continually lubricated. The lid and hinge lug are so designed that the lid is locked securely to the box without the use of a hinge pin. To remove or apply the lid a wedge is driven between it and the spring lever, no special tools being required.



Journal Box Arrangement Showing Tight-Seal Lid



Fiberglas and Asbestos Are Combined to Make This Pipe Covering

Pipe Insulation

An insulation designed particularly to meet the harsh service conditions encountered by steam train lines, on locomotive tenders and underneath passenger cars has been developed by the Gustin-Bacon Manufacturing Company of Kansas City, Mo. The product, announced as G-B Flexible Pipe Insulation, is composed of special Fiberglas fibers and coated asbestos cloth so constructed as to be applicable to curved as well as straight-run pipe on railroad equipment.

The Fiberglas fibers are fabricated into a rope-like roving, spirally bound with glass twine and fastened longitudinally to the asbestos jacket. This resilient Fiberglas provides high, permanent thermal efficiency and the rope construction permits easier, more flexible application to pipes and supplies a more uniform insulation at all points, with a saving of approximately 20 per cent in weight. Fiberglas, being impervious to deterioration from rot, moisture or heat, will maintain its efficiency under all operating conditions. It is designed to withstand the impact and abrasion of flying ballast. Under severe road service it will not sag or shake down.

The durable asbestos cloth jacket is

waterproofed on the outer surface. Longitudinal sealing flaps with a 1-in. overlap at one end of each 3-ft. section assures a moisture-tight assembly. Strong nickel-plated hooks, securely fastened to the jacket, supply a quick application to the pipe by lacing with copper wire. The insulation is reclaimable and can easily be removed and reapplied. It is available for pipe or tubing ranging in diameter from ¾ in. to 4 in. and is regularly furnished in 3-ft. sections in a standard thickness of 1 in.

Deflector Journal-Box Housing

A new journal box feature announced by National Malleable and Steel Castings Company, Cleveland 6, Ohio, is a deflector housing. This is a circular, bell-shaped housing which extends from the journal box toward the wheel plate and surrounds the wheel hub. The journal box has a single back wall in place of the usual dust-guard slot. The motion of the wheel sets up a turbulence of air in the housing, and this, together with the special formation of the back wall, resists the entrance of dirt or water into the box. No dust guard is required. A vertical fence across the top of the housing prevents the entry of brine drippings, when the box is used in refrigerator-car service. Road tests

A Circular Housing on This Journal Box Surrounds the Wheel Hub and Serves to Keep Dirt Out of the Box

have consistently shown a remarkable reduction in dirt and moisture pollution of the oil and waste in the box.

Full-Length Reclining Seat

Greater passenger comfort will be assured in cars equipped with reclining seats coming from the plants of the Pullman-Standard Car Manufacturing Company. The seats have been designed to give easy-chair sitting qualities with cushions styled to conform with body contours. Each seat is independently adjustable in various reclining positions. In addition, an upholstered leg rest has been built into the back of every seat, which operates by push-button control. By adjustment of his seat to the fully reclining position and by dropping the leg rest in the seat ahead of him, a passenger has a full-length chaise-longue type sleeping surface available to him.

These seats are expected to be especially popular in cars operating in overnight trains.

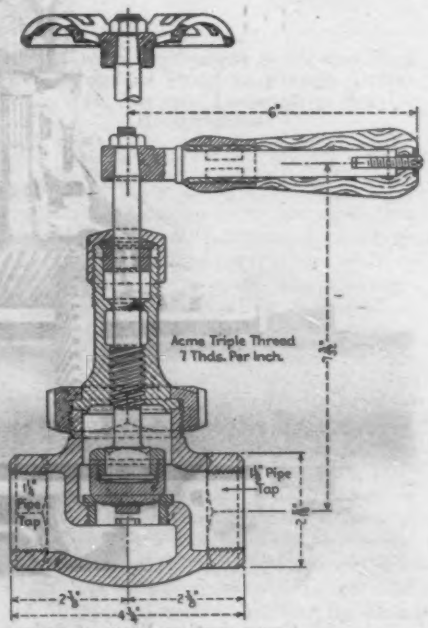
A Leg Rest Combined with a Reclining-Type Seat Will Provide Greater Comfort for Coach Passengers

Quilted Hair Insulation

A refrigerator car insulating material manufactured by the Charles Lachman Company, Inc., Phoenixville, Pa., is prepared from hair fibers, blended and combed into a batt form and sewed between layers of Sisalkraft paper. These insulating mats are not pressed, because the manufacturer's experience has shown that heat conductance is lowest when the hair batting is not compressed. This insulation, known by the trade name Equatemp, has a thermal conductivity of 0.24 to 0.26 B.t.u. per hour, per square foot, per deg. F., per 1-in. thickness. It is said to retain its form and efficiency throughout the car life, without shaking down or otherwise deteriorating.

Quick-Acting Blower Valve

A quick-acting 1¼-in. blower valve has been developed by the T-Z Railway Equipment Company, Chicago, all parts of which are A. A. R. standard except for the steam and the bronze bonnet. The Acme triple thread, seven threads per inch, on the brass stem permits the valve to be fully opened or closed quickly



The T-Z Quick-Acting Blower Valve

by turning either the A. A. R. standard hand wheel or the lever. The stem is fitted with a removable ball-type disk seat made of nickel alloy. This disk, in turn, seats into a removable ring made of the same material.

It can be furnished with a globe- or an angle-valve body, both of which are made of steel. All other parts are made either of brass or bronze.

Generator and Compressor Drive

The Spicer Positive Drive for electric generators and refrigerating compressors on railway cars has been improved over the earlier models, which were first used on railway equipment. As furnished now by the Spicer Manufacturing Corporation, Toledo, Ohio, they may be used with the A. A. R. standard turned or ground axles and are interchangeable for all sizes of axles 6 in. by 11 in. or smaller. The drive is of the positive type and fully enclosed, so that it is not affected by ballast, dirt, snow or changes in temperature. The mechanical efficiency of the drive, as determined by actual laboratory tests under full load of 20 kw., is 98.3 per cent at 30 m.p.h. If used with an available automatic clutch any additional starting load on a locomotive is eliminated, because the clutch does not engage until a speed of from 8 to 12 m.p.h. has been reached.

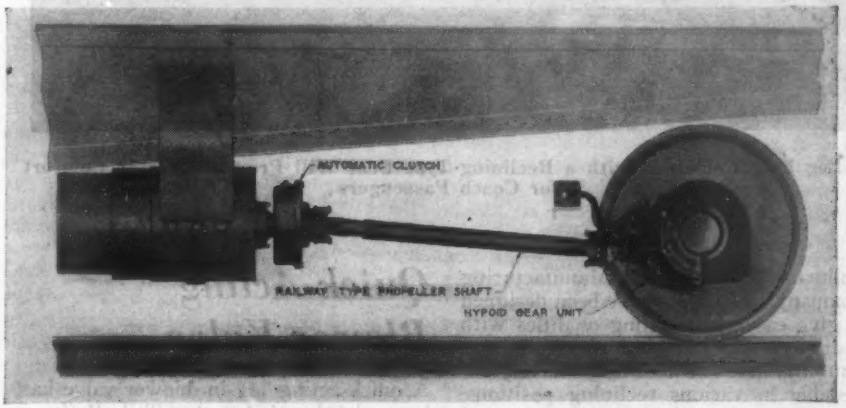
All important parts of the drive are made of heat-treated alloy steel. Installation of the unit does not interfere with normal flexing of the axle nor with the normal floating of the axle in the bearings.

The weight and torque are distributed over a wide area to prevent localized stresses. No metal comes in contact with the axle to cause wear.

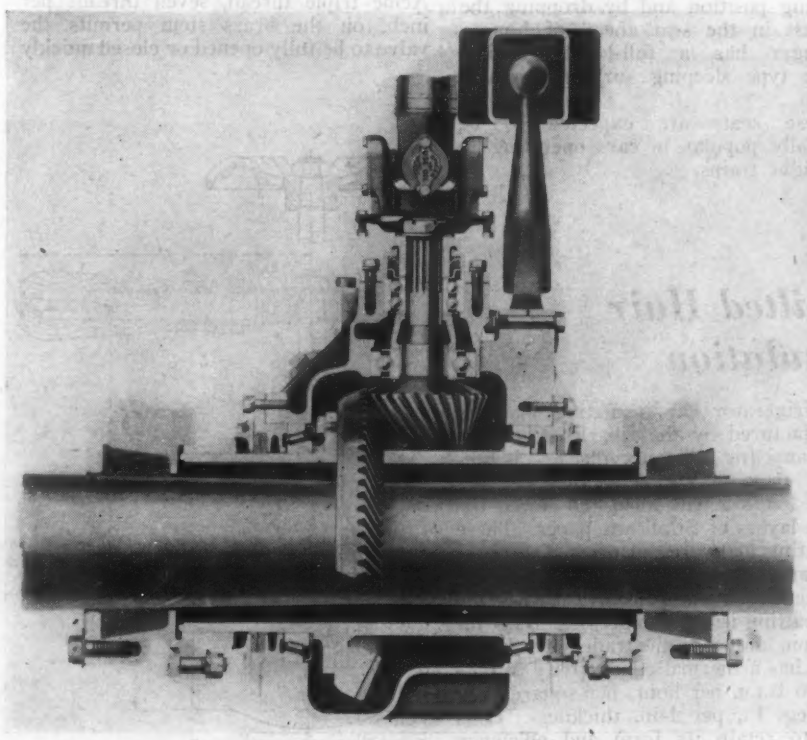
A safety clutch slips under shock loads such as occur when switching cars, thereby preventing damage to either the drive or the generator. Under similar conditions the automatic clutch remains disengaged, which eliminates the transmission of shock loads. Both types of clutches have a safety feature, so that they automatically release and run freely on anti-friction bearings in case of an extreme overload.

The hypoid gear used in the drive provides quiet operation, with the gears running constantly in a bath of oil, fully protected from dirt. The drive is attached to the axle with a rubber mounting and the torque arm is attached to the drive through rubber, to prevent the transmission of wheel or track noises through the drive to the car.

The drives have been designed to perform satisfactorily at high speeds. There are four interchangeable ratios available to suit different generator requirements, with a maximum capacity to handle torque loads up to and including a 20-kw. generator and the additional capacity required for a standard electrical safety fuse or control.



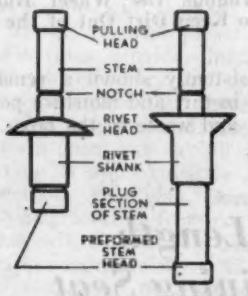
The Method of Mounting the Positive Generator Drive



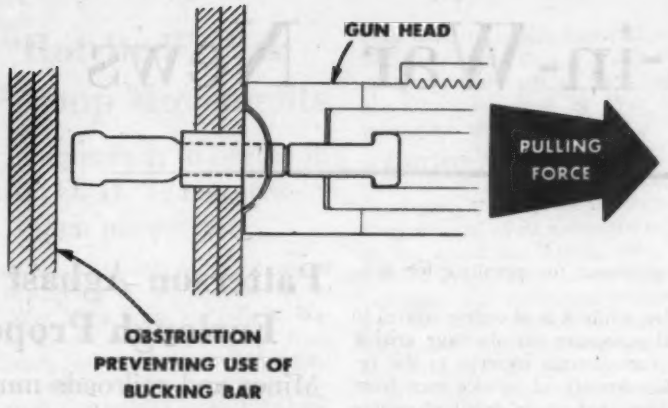
Cross-section View of Spicer Positive Generator Drive

One-Man Riveting

Originally designed to solve the problem of riveting in blind locations where it was not possible to buck up an ordinary rivet, the Cherry rivet, manufactured by the Cherry Rivet Company, Los Angeles, Cal., has been found to have a wide range of uses in other applications. Briefly described, the rivet consists of an assembly of two parts, a hollow member and a stem. The action of a special riveting gun pulls the stem into a blind head and completes the rivet installation. These rivets are available in a variety of types, diameters, grip lengths and alloys, intended to meet practically any



Left: A Regular Hollow-Type Rivet—Right: A Self-Plugging Rivet



One Man Can Apply This Special-Type Rivet Intended for Use Where a Bucking Bar Cannot Be Employed

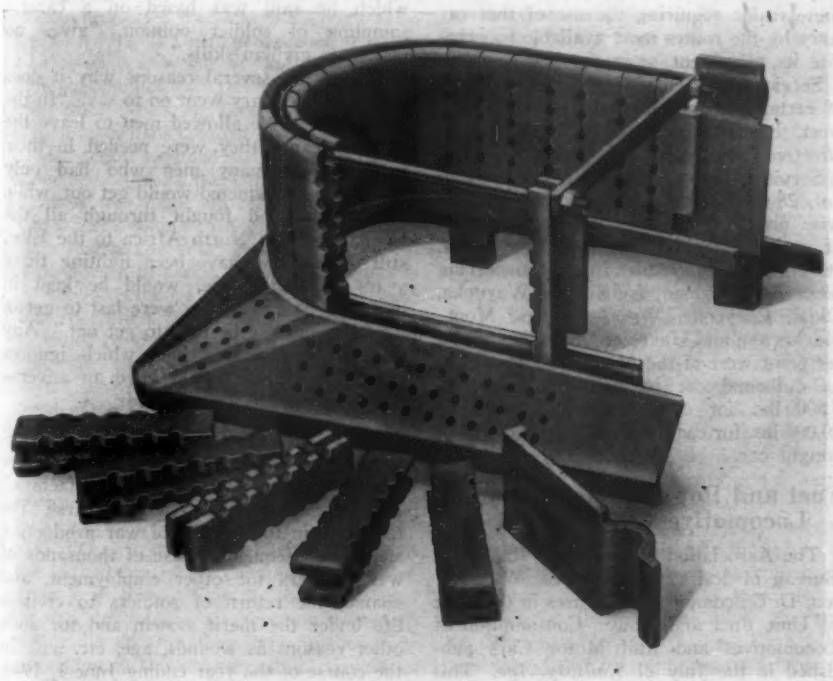
industrial application where their use is indicated. They may be used on a wide range of pliable and brittle materials, as well as on all sheet metals. They provide excellent fasteners for many interior installations, especially in passenger cars.

Sectional-Type Stoker Grate

The Standard Stoker Company, Inc., New York 17, is now furnishing for use with Standard B and MB stokers, a sectional type grate in which only those portions deteriorating due to the heat in the firebox need be replaced when worn.

The sectional grate consists of vertical sections which form the upper portion and are supported by shallow right and left base grates which, with few exceptions, can be applied to existing forked or double center grate frames. The vertical sections are furnished in several lengths to suit the firing heights for different classes of locomotives. They fit into a U-shaped groove in the grate base and when assembled are locked in position by a U-shaped rod. All grate sections except the two at the ends are interchangeable for either the straight or curved sections of the grate.

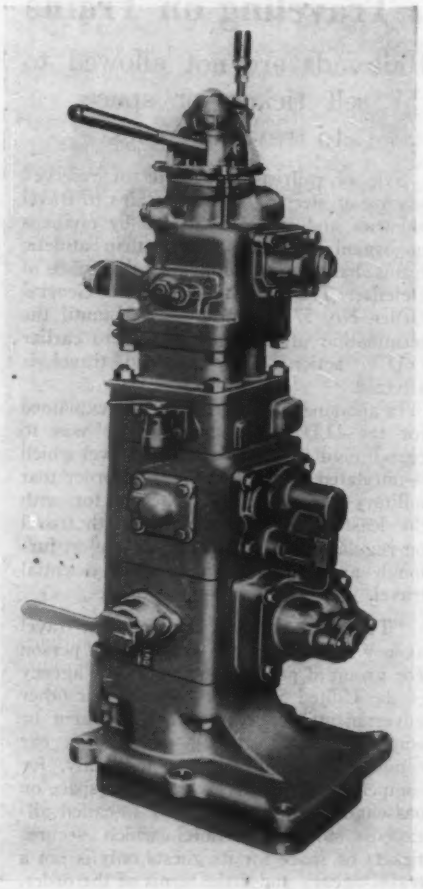
Air openings in the vertical portions of the grate register with similar openings in the base grates and permit a flow of air to be drawn from the ash pan through the openings into the firebox. This air not only aids combustion, but helps materially and profitably to prolong the service life of the grates.



Breakdown View of Parts Comprising the Sectional-Type Protecting Grates for Locomotive Stokers

Composite Brake Equipment

The 24-RL brake equipment manufactured by the Westinghouse Air Brake Company, Pittsburgh 30, Pa., is a composite brake for all types of road locomotives. Its design is so arranged that supplementary control functions such as train control, safety control and electropneumatic brake control for passenger service can be supplied by the addition of necessary portions without altering or discarding basic parts.



Basic Brake Equipment Stand Designed with Standard Parts to Permit Alterations for Various Locomotive Service Requirements

The equipment was conceived and designed as a basic system readily applicable to locomotives whose future assignment may be undetermined. Thus, as an example, with a locomotive in line production, only the basic brake system is applied. When the locomotive assignment has been determined, any additional apparatus required to meet the exact operating requirements can be readily applied without altering the basic system.

Railroads-in-War News

O.D.T. Bans Group Traveling on Trains

Railroads are not allowed to sell tickets or space to travel agencies

Sale of railroad tickets or of reserved seating or sleeping space in trains to travel agencies and travel on trains by civilians in organized groups, other than athletic teams, has been prohibited by the Office of Defense Transportation in its General Order No. 57, effective July 21 until the termination of the war, subject to earlier O.D.T. action. Only railroad travel is affected.

In announcing the order, it was explained for the O.D.T. that its purpose was to curtail civilian passenger train travel which is unrelated to the war effort, in order that military needs may be provided for with the least possible interference with travel on regular trains by service people on furlough and civilians engaged in essential travel.

"Travel Agency" Defined—A travel agency is defined in the order as any person (or group of persons, including any agency of the United States or any state or other governmental entity), except an agent or employee of a railroad or sleeping car company, who, directly or indirectly, for compensation, purchases tickets or space on passenger trains or sponsors so-called all-expense tours. A hotel which secures tickets or space for its guests only is not a travel agency under the terms of the order.

The "organized group travel" banned under the order is defined as travel on a train by two or more persons together, with or without a guide, when arrangements for such travel have been made by a travel agency or, in advance and for compensation, by any other person.

The prohibitory clauses of the order read as follows:

"No persons, whether an employee of a carrier or otherwise, shall knowingly reserve for, sell to, or make available to, any travel agency any ticket for use on any passenger train; and no travel agency shall, directly or indirectly, reserve or cause to be purchased, acquire, or cause the issuance of, any such ticket.

"No carrier shall knowingly permit any persons engaged in organized group travel to board or travel on any passenger train, and no person shall engage in organized group travel by boarding or traveling on any passenger train."

Except for its reference to the Second War Powers Act of 1942, as amended, and to Executive Order 8989, as amended, for authority in the circumstances, the order made no provision for penalties for non-compliance.

The order, while it is of course related to the critical passenger car shortage arising from troop movements incident to the return to this country of service men from overseas (reported on in detail elsewhere in this issue), was issued after considerable unfavorable publicity had been given to trips to Washington, D. C., of groups of "tourists" under travel agency sponsorship. Such travel, so long as groups did not exceed 50 persons, was not prohibited by outstanding O.D.T. regulations, such as the prohibition on conventions.

I. C. C. Service Orders

The provisions of Service Order No. 330, generally prohibiting preicing and precooling of refrigerator cars to be loaded with potatoes, have been modified by Amendment No. 2 thereto, which permits shippers to use their own equipment to precool, but not to preice, such cars if no extra switching is required, and also extends the territorial coverage of the order to include potatoes originating in Oregon and Washington. The amendment is effective from July 22 through August 31.

On account of carrier disability resulting from a slide on the bank of the Mississippi river at Natchez, Miss., interfering with the operation of the car ferry at that point, the Missouri Pacific has been directed by Service Order No. 339, effective July 21 through July 31, unless otherwise provided, to reroute traffic requiring the use of that car ferry by the routes most available to expedite its movement.

Service Order No. 338, requiring delivery of certain refrigerator cars to the Southwest, has been vacated by No. 338-A, effective July 22.

Service Order No. 340, effective from July 28 until January 10, 1946, unless otherwise provided, requires minimum loading of carload transfer freight in the West. It prohibits railroads from transferring westbound carload freight at Waynoka, Okla., Cheyenne, Wyo., Billings, Mont., Harlowton, and Havre or "any other transfer point west of the Mississippi River" to an outbound car in quantities less than 7,500 lbs. for each refrigerator car and 20,000 lbs. for each box car or other type of freight car.

Fuel and Power Consumption of Locomotives—A Correction

The Association of American Railroads, Bureau of Railway Economics, Washington, D. C., compiled the figures in the table of Unit Fuel and Power Consumption of Locomotives and Rail Motor Cars published in the July 21 *Railway Age*. This credit line was inadvertently omitted from the table as it appeared on pages 124 to 128, inclusive.

Patterson Aghast at Furlough Proposals

Mines and railroads must rely on discharges and cutbacks for labor

Stating at his July 19 press conference that, in the past month, 50 industrial and professional groups had asked the Army to release men to meet civilian needs, Acting Secretary of War Patterson declared that "it is impossible for us to accede to these requests. If we authorized the discharge of all those for whom requests have been received, we would have to release . . . at least 1,000,000 men from the Army. We would then be forced to abandon the present system of discharging soldiers on the merit system. Or if we were to furlough these men, we would to the extent they were furloughed have to cut down on the operation of the merit system."

Discharges have been asked for loggers, longshoremen, policemen, firemen, teachers, ministers, college students, farmers, dairymen, doctors, dentists, engineers, draftsmen, railroad workers, textile workers, shipyard mechanics, hard-rock miners, tire builders, and many other groups, Mr. Patterson explained. But the merit system under which the Army selects those men in service who can be returned to civilian life, which he said was based on a careful sampling of soldier opinion, "gives no weight to civilian skills."

"There are several reasons why it does not," the Secretary went on to say. "In the first place, if we allowed men to leave the Army because they were needed in their former jobs, many men who had only recently been inducted would get out, while others who had fought through all the campaigns from North Africa to the Elbe, still others who have been fighting three years in the Pacific, would be kept in uniform. The men who were last to get in would frequently be first to get out." Any plan for discharging men which ignores length of service would have an adverse effect on morale, he declared.

Says Lay-Offs Will Help—"Moreover, civilian manpower requirements are steadily being eased by two main factors," Mr. Patterson added. These are, first, "the reduction in the volume of war production and the consequent release of thousands of war workers for other employment, and second, the return of soldiers to civilian life under the merit system and for such other reasons as wounds, age, etc. . . . In the course of the year ending June 1, 1946, we expect to return 2,000,000 men" to their homes. "We cannot release any more than

(*Continued on page 177*)

Try "Hot Bed" Plan in Troop Movements

Army assigns men to berths in shifts; O. D. T. requires 3 men per section

In what was officially described as an attempt to alleviate the sleeping car shortage, the War Department on July 22 dispatched an experimental troop train from Camp Kilmer, N. J., to Fort Sam Houston, Tex., with provisions for "rotation sleeping," whereby each soldier is allotted sleeping car space for a prescribed number of hours, after which he shifts to a coach to allow another man to take his place in the berth. Meanwhile, on July 20, the Office of Defense Transportation had acted to conserve the use of passenger equipment in movements of service personnel by requiring uniform occupancy by all branches of the service in both sleeping cars and coaches.

The experiment in rotation sleeping was described in a War Department statement which quoted Under Secretary Patterson as saying that "the War Department is concerned with obtaining for our soldiers the best possible travel accommodations, but we recognize our responsibility to conserve Pullman cars for essential civilian travel to the maximum extent possible. The Army will continue to make every effort to reduce the heavy burden placed upon our railroads by the redeployment of our forces to the Japanese war."

Standard Shipboard Practice—It was pointed out that shift sleeping is not a new experience to troops who have been in Europe, since an arrangement under which men aboard Army transports are assigned "bunk hours" for the trip across the Atlantic has been used throughout the war. The procedure has not previously been tried on a troop train, however, and it was explained that the opinions of the men making the trip under this arrangement would be sought as to their comfort and its feasibility.

The train assigned to the 513 soldiers scheduled to make the trip of 3 nights and 2 days was made up of 8 sleeping cars, 5 coaches, 2 dining cars and a baggage car, according to the War Department.

Obviously in connection with complaints by the director of the Office of Defense Transportation that he had not been kept informed by the War Department as to its changing plans for "redeployment," reported more fully elsewhere in this issue, the department's July 20 statement went on to say that the rotation sleeping experiment is "one of a number of steps taken by the Army to improve travel conditions and minimize the strain on domestic railroad facilities.

"Units en route to the Pacific by way of the United States are coming back without their equipment. This is being shipped directly to the bases where the units will eventually go after they have finished their retraining in this country, thus eliminating the hauling of hundreds of thousands of tons of equipment by rail across the United States. War Department plans for redeployment include use of East coast and Gulf ports to handle material which is not of first urgency, thus relieving the pressure on the western roads. Canadian railroads are also being used for War Department movement wherever necessary.

Carriers Get Notice—"To assist the railroads in planning their schedules well in advance, the War Department is keeping them advised of its estimated monthly load as far ahead as March, 1946. They are notified immediately of any changes in the estimates. On individual troop movements the railroads receive at least 72 hours notice, and in most cases they are given five to twelve days notice.

"The Army also is cooperating with the railroads, the railroad brotherhoods and other government agencies in the drive to recruit 65,000 workers needed immediately by the western railroads to meet their operating and maintenance requirements during the period of redeployment. This manpower shortage must be relieved if these carriers are to keep men and supplies moving swiftly to our West coast ports for shipment to Pacific combat theaters."

The O.D.T., pointing out that "the occupancy standards of the various branches of the military services heretofore have not been uniform," issued General Order No. 56, effective July 20, prescribing uniform car occupancy standards for all organized military movements. Sleeping cars when so used are required to have an occupancy of 3 persons in each section, while coaches are required to have an occupancy of 3 persons for each 2 double seats or 4 single seats. Each tier of berths in a troop sleeper is considered as a section for the purposes of the order, which does not apply to "foreign-owned" cars occupied by troops of a "foreign country," nor to the transportation of hospital patients. Provided all other cars in a train are fully occupied, the order permits using one overflow car per train if 50 per cent of the space therein is occupied as prescribed in the order.

Alters Navy Practice—The order applies to organized military movements of the War Department, Navy, Coast Guard and Marine Corps, and railroads are prohibited from moving cars in such service unless they are occupied as it requires. Until this order was issued, it had been regular Army practice to assign 3 men to each sleeper section, but in movements under Navy direction space in sleeping cars has been assigned on a basis of one man per berth.

The Department of the Interior explained on July 21 that rail and bus movements under War Relocation Authority management were in conformity with O.D.T. equipment conservation regulations. Such movements arise from the return to their homes of Japanese Americans from war relocation centers. One train of 7 coaches, a dining car, 2 baggage cars and a tourist sleeper was scheduled to leave the Rohwer, Ark., center July 26, carrying 425 evacuees. Use of the tourist sleeper is limited to the sick and aged. Most of the passengers are traveling about 2,000 miles to California destinations, though some leave the train at Pueblo, Colo., or Ogden, Utah. The schedule called for releasing cars from the train at Lodi, Calif., and other stations thence to Los Angeles, where it was planned to have it arrive with only 2 coaches, the sleeping car and a baggage car.

Too Little, Too Late Policy Imperils RRs

Johnson sums up government's blunders in preparing for "redeployment"

If suitable train accommodations aren't being provided for some of the troops returning from overseas, the fault lies with the War Department.

If a transportation crisis, threatening the movement on schedule of essential freight as well as of service personnel, develops on the western railroads, most of which are currently in a condition of operating congestion, the fault will lie with those government agencies which have failed to make adequate provision of equipment, and especially of men, to enable these railroads to develop their maximum capacity.

Punches Not Pulled—These views were expressed vigorously and repeatedly by Colonel J. Monroe Johnson, director of the Office of Defense Transportation, in a public hearing this week before the Senate special war investigation committee, generally known as the Mead committee, which was called to inform the public as to the facts back of the widely published "atrocity" stories concerning the handling of returning soldiers and the conditions responsible for the increasingly grave congestion of lines serving the Pacific coast.

Colonel Johnson was the only witness heard by the committee in its open sessions, but it was explained that the Army and other government agencies concerned in the situation had been called upon for explanations in executive sessions. The information developed in these sessions will be the subject of a report to the Senate later, but the general picture was revealed by the O. D. T. director's observations and by remarks in the hearing and on the floor of the Senate by members of the committee.

Not Too Late to Mend—Notwithstanding the mistakes that have been made, in his opinion, in the provision of equipment and manpower for the railroads throughout the war emergency, and especially in recent months for the roads serving the Pacific coast, an "immediate and substantial" increase in the number of employees in all of the railroads' operating and maintenance departments Colonel Johnson said, probably would enable them to handle the load they will be called upon to bear in the next 12 months, even though "I can't prove it on paper." It is too late, now, he declared, to attempt to provide more materials or more equipment. The emergency is at hand, and the only salvation is adequate manpower.

R. R. Men or Soldiers?—When members of the Senate committee asked the O. D. T. director what he had done to obtain more men for the railroads, he reviewed in some detail the representations the O. D. T. had made to the Army, the War Production Board, the War Manpower Commission, and other government agencies, and called attention to statements he had made, even before his appointment to

succeed the late Director Eastman, that a railroad man on the railroad could contribute much more to winning the war than a railroad man in the Army. The railroads have been in need of more men since the war began; three months or so ago some favorable action was taken, and at last the matter is receiving the "earnest, though badly delayed, attention" of the W. M. C., while the Army has afforded "some relief" by furloughing soldiers, he explained.

Senator Ferguson, Republican of Michigan, undertook to ask the O. D. T. director, "If you have been trying for three months—"

"Two years," Colonel Johnson interrupted.

"If you have been trying for two years to get these men," the Senator continued, "what makes you think you can get them now?"

"Did I say I am going to get them?" the O. D. T. director answered. "The picture today is pretty gloomy."

Wants Army to Release Men—Senator Mead, Democrat of New York, the chairman of the special committee, remarked that it would seem to be possible to get 75,000 more men for the railroads through the combined efforts of the Army, W. M. C., Railroad Retirement Board, and the interagency recruiting campaign now under way, to which President Truman last week added his voice (as noted in *Railway Age* of July 21, page 109). Referring to late press reports that the Army was planning to move considerable numbers of men from Europe directly to the Pacific without passing through the United States, the Senator expressed the view that it would be better for the Army to furlough a lot of railroad men, if necessary, to increase railroad capacity so that the maximum number of service men might pass through the United States, and have an opportunity to enjoy a furlough at home before going to the Pacific. "I agree," the O. D. T. director replied.

Colonel Johnson's testimony, and other information gathered by the committee in executive sessions, made it plain, the chairman continued, that it is "imperative" that the railroads get sufficient manpower to do the job ahead of them. The committee, without prolonging the investigation, had decided to use its utmost influence and energy toward this end, he announced.

(Under Secretary of War Patterson's views with respect to furloughing soldiers for work on the railroads, in the mines, or in other essential occupations are set forth elsewhere in this issue.)

Questions Asked of Johnson—Appearing before the committee on July 23 and 24, Colonel Johnson discussed five general questions upon which the committee had asked him to express his views, and in the course of this statement answered numerous questions which had to do not only with the immediate topic of "redeployment," but with a variety of operating and traffic matters. In opening the hearing, Senator Mead called attention to the committee's policy that the facts must be brought out whether or not that procedure involved any incidental reference to friction between government agencies.

Discussing the outlook for the next year in transportation, the O. D. T. director pointed out that the expected slight decrease in freight ton-miles handled did not mean any reduction in the complexity of the railroads' job, since this decrease would result from developments in the East, while the western lines would have a substantial increase. The passenger-miles total may not exceed the 1944 record, he continued, because of the effect on civilian travel of the diversion of sleeping cars and coaches to military use, but much more serious problems already are presenting themselves because of the extreme fluctuations in troop movements, their concentration on a few routes, and the one-way load element.

Slow on Troop Sleepers—While the outlook for meeting locomotive and freight car production schedules for the year is improving, he continued, it is behind expectations, largely as a result of manpower difficulties. Actual manufacture of troop sleepers and kitchen cars he "hoped" to see under way in September. "The furnishing of additional railway equipment could well be described," Colonel Johnson added, as "too little and too late. I say with emphasis that this, together with the lack of foresight respecting man-power, is the fundamental cause for the difficulties we are now experiencing."

After giving some of the reasons for the "serious insufficiency of railroad rolling stock and rail today, the O. D. T. head added: "Further than that, our freight cars, taken as a whole, are seriously deteriorated and, while there are materials available to make badly needed repairs, the problem of manpower for the repairing of cars is, and has been for months, extremely critical. While the locomotives generally are in better condition than the cars, their insufficient manpower is interfering with the daily servicing of locomotives which would permit maximum utilization. Too many locomotives are out of service laid up for heavy repairs."

The committee sought information as to the possibility of transferring engines from eastern roads, where some falling off of business was anticipated, to the western lines, Senator Mead remarked that he had been advised that the Pennsylvania had 50 locomotives in storage in the Pittsburgh area, which it would seem to be advisable to shift west, where the need is more acute, and asked what, if anything, the O. D. T. had done along that line.

Transfer of Power—Agreeing that the O. D. T. had power to move equipment from road to road at will, Colonel Johnson remarked that the railroads could do, and are doing, a much better job by themselves in this respect than if the O. D. T. tried to direct it. Upon investigation of the Pittsburgh situation, it was reported to the committee that the Pennsylvania had only 6 small coal-burning engines, not equipped with stokers, stored there, and that these were not suitable for Rocky mountain or Pacific coast operation. It was suggested that the Senator's information might have been based on a situation on a Sunday or holiday when the mines were not running.

With reference to transferring locomotives from the East to the West, the O. D. T. director pointed out that coal burning power would afford no relief in territories

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German Locomotives Repaired by the M. R. S. for Use on German Railways

At the left is a modern condensing-type locomotive, and at the right, a war-time non-condensing type. The photographs were received from Lt. E. D. Shain, formerly with the Reading, and now with the 757th railway shop battalion.

where oil is used for fuel. However, he explained, the Santa Fe recently bought 4 locomotives from the Pennsylvania and 7 from the Boston & Maine. The Southern Pacific bought 4 from the Boston & Maine. The Norfolk & Western and Chesapeake & Ohio have sold about 50 locomotives to the Santa Fe, Union Pacific, and Denver & Rio Grande Western. The last report of the Association of American Railroads showed 391 engines leased by owning roads to other carriers.

Not Enough Men for Present Power—Apart from these facts, however, Colonel Johnson added, the bottleneck is man-power, and more equipment would do the western roads no good when they don't have enough men to make full use of the capacity they already have.

The "redeployment" situation was discussed by the O. D. T. director at length, since it was the immediate cause of the investigation, and he made it clear that his quarrel with the Army was not over the speed with which men are being brought back from overseas, but over the failure of the War department to keep him informed on its plans, so that more intelligent use could be made of the available transportation facilities. Reminding the committee that he was overseas in World War I, Colonel Johnson said he knew how eager the soldiers are to get back to this country. He would have been happy to ride in a wheelbarrow to get home in 1918, he declared.

Though he has full responsibility for and authority over all types of domestic war-time transportation, in conjunction with the Interstate Commerce Commission, the O. D. T. director asserted, "I have little more knowledge of the plans for redeployment of our troops from the European to the Pacific theater of war than is available to the general public through announcements of the press." It was stated in September, 1944, that the majority of troops and equipment would be shipped direct from Europe to the Pacific. On April 6 of this year it was said to be imperative that the movement to the Pacific be started so the campaign against Japan could be accelerated, he declared, and "the only mention of troops coming to the United States after V-E Day was in connection with the men who would not participate in the Pacific war."

What O. D. T. Was Told—On the basis of this information, the O. D. T. felt present facilities would be sufficient to carry out the Army's plans, and requests to the W. P. B. for new passenger cars were "kept to a minimum," which the W. P. B. reduced. But on April 24, Colonel Johnson said, he learned that 2,000,000 men would be brought to the United States over a 10-month period, some for discharge and a majority for furlough. On May 2, the Army gave the O. D. T. its "redeployment" plan on the per-month basis, indicating the points to which troops would be moved from East coast ports. On May 28, he continued, these figures were revised. "Actual arrivals in June exceeded the estimate made by 50,000 and in July by 97,000. From the time we learned that redeployment would be through the United States, plans for the movement have been put into effect as rapidly as possible. I wrote the War department on May 16," Colonel Johnson declared, "calling attention to the fact that the limitations of railroad equipment demanded that the War department gage the arrival of troops and the furlough of troops to the capacity of the railroads to handle them."

The O. D. T. still receives no details as to the return of troops to the United States, except what it gathers from the railroads through its own organization, its director told the committee. Purely by chance, he went on, he had learned that the program for July had been further stepped up, so that about 353,000 troops will be returned to this country by the end of the month, and he had "heard a rumor" that this may be the peak month for this movement.

Arrivals Without Notice—"In a recent 3-day period 60,000 were brought in; on one of these days, about 34,000 troops landed at New York alone. Contrasted with this, there are other days on which practically no troops are landed. If we could avoid such peaks and valleys and have a steady inflow of troops, it would permit higher standards of transportation for both military and civilians because of better equipment utilization. Advance notice of arrivals is essential in every case and we now understand that there has been improvement in this respect. I appreciate that the scheduling of troops is highly difficult, but the fact remains that we have only so much rail equipment and, with troops arriving unexpectedly in large numbers, there is bound to be inconvenience and discomfort to all concerned."

When committee members wanted to know what he would have done to meet the situation if he had been informed sooner about the accelerated rate of return of troops from Europe, Colonel Johnson said the order removing Pullmans from runs of 450 miles and less, and other measures, such as the limit of advance reservations to 5 days, the pooling of coaches, and the requirement that the armed forces occupy at least 75 per cent of the capacity of each car supplied, probably would have been issued sooner.

Furlough Travel—In this connection Senator Burton, Republican of Ohio, asked a number of questions about restrictions put by the Army and other government agencies on the travel of its own personnel, particularly where soldiers were "wandering around the country" on week-end passes, taking up space needed for essential travel, and where Pullman or other space was reserved through the government reservation bureau, either for Army officers or for other people on the government payroll. Committee members expressed some surprise at the information that the reservation bureau provided accommodations not only for Army, Navy, Marine Corps and Coast Guard personnel, but also for the W. P. B. and the Office of Price Administration, and they pressed Colonel Johnson for details as to how the activities of the bureau were affected by the order curtailing Pullman runs.

Replying that his job was to furnish transportation, and that it was not his business whether the Army was allowing too many men to travel, the O. D. T. director remarked that the O. P. A. and W. P. B. had vigorously and successfully resisted his efforts to remove their reservation bureau privileges, and that many other agencies now wanted the same consideration. Business has to go on, and the government has to run, he observed, even though troops are being moved.

O. P. A. and W. P. B. Get Travel Preference—All agencies had been urged to cut down the travel of their personnel, and he believed there had been a generally good response. The amount of space allotted to the reservation bureau was cut to the extent that Pullmans were removed under the 450-mile limitation, he pointed out. The various recent measures affecting the ease and comfort of civilian travel, he "imagined," had "dissuaded" some persons from traveling, and in advance of actual figures he felt confident that a very noticeable decline in travel on regular trains had occurred. In fact, he added later, if civilians continue to restrain their use of trains, and if more man-power is made available to the railroads, it may be possible to "get by" without further restrictions. But he cannot draft men to work on the railroads, he observed, he can only "yell" for them.

Colonel Johnson went into considerable detail in discussing the capacity of the railroads to handle the "redeployment" task, along with the continuing movement of essential freight. Except as to passengers, no great difficulty is expected east of the Rocky mountains, assuming "great relief" as to man-power, he said, but in the West, with one exception (in the Northwest), the railroads are now carrying about the limit of their capacity—around 5,000 carloads of freight and an average of 60 troop trains daily through the gateways. The southwestern lines have "reached the limit of what they can do without additional manpower and are at present, and have been for the last four weeks, more or less congested."

Western Roads Overloaded—With this existing congestion and with additional material to move to the Pacific, "it will be impossible for the western railroads to redeploy the troops and move the freight load. It must be borne in mind that redeployment as such has hardly touched our western lines. It is said that seven moves per man will be necessary for each soldier redeployed across the continent. We are now making the third and a few of the fourth moves per man. . . . We are moving now about 60 troop trains daily. This will certainly reach 100, and it may go much higher. Every troop train diminishes the capacity of the railroads to handle freight by perhaps two trains. (Colonel Johnson remarked that he personally considers three a better estimate.) Therefore, assuming that we are called upon to continue the present freight movement plus 40 additional military trains, something must give way."

In the past, the O. D. T. director said further, better use could have been made of the available railroad equipment if he had been more fully informed of the Army's plans. The same is true for the future. "So far as the redeployment of troops is

concerned, if we had full and complete information as to the load which the railroads are to be called upon to transport trans-continentally, we would be able to improve the situation to some extent, notwithstanding the fact that the western railroads are now filled to their capacity considering their present lack of equipment and man-power. In my opinion, adequate man-power for the western railroads would enable them to utilize their full capacity and move, perhaps, as much as 15 per cent additional load."

During Colonel Johnson's appearance before the committee there was some discussion of the possibility of finding some relief for the railroads, in the movement of troops, by making greater use of air and bus facilities. He disclosed that the Army, the O. D. T., and other parties have undertaken negotiations in the past few days in an effort to work out a program of this sort along the general lines of the Pullman assignment plan, that is, with a definite number of units of equipment allocated solely to military use. It would be very helpful, he conceded, if 1,000 or so Army transport planes were put temporarily in service in this country for the movement of troops. That, however, the O. D. T. director pointed out, was up to the Army—"they are not here."

Army Doesn't Need R. R. Men—Leading up to the committee's decision to seek ways and means to get more men for the railroads, Senator Mead had remarked that the Army's need for railroad men for overseas operations was no longer so urgent as before Germany was defeated, particularly as there apparently would be very little opportunity to utilize their experience in the area of fighting in the Pacific. So far, it was brought out, the Army had "reluctantly" agreed to furlough for 30 days 4,000 soldiers for railroad work, while there were 300,000 railroad men in uniform on January 1. Of the [illegible] about 2,500 had shown up on the railroads so far, Colonel Johnson informed the committee, and of this number some 1,000 were without any railroad experience.

The open hearing at which the O. D. T. director made his belief plain that the Army was responsible for bungling "redeployment," and that the western roads would not be able to meet the demands on them without large and prompt man-power relief, was forecast in a July 19 statement by Senator Mead, in which he revealed that the committee had investigated the situation in executive hearings. "Adequate planning and careful coordination by all of the government agencies involved would have helped to cushion the shock of the job which the railroads must now perform," he said at that time.

Just Not Enough Cars—"The task, however, is so tremendous that even at best, severe restrictions on transportation must be expected to continue. There are not enough Pullman cars in the entire country to provide Pullman transportation to every soldier whom the Army will move in the next six months. Moreover, there are not even enough of the best type of day coaches to carry out this assignment. However, all soldiers traveling by train for more than 48 hours will get Pullman space."

Among train-mile saving proposals under consideration, Senator Mead said, was one to have trans-Atlantic Army planes land troops at Georgia or Alabama cities, rather than have flights terminate at Miami, thus eliminating a rail haul the entire length of Florida. Planes flying the northern route could land at Chicago or other central points, again eliminating a long rail haul, he pointed out.

The committee statement led to an extended discussion of the "redeployment" situation on the Senate floor July 21. This was opened by Senator Lucas, Democrat of Illinois, who remarked that "from some quarters there has been apparent criticism of the Army because the Army has been bringing more men from the European theater than the Army originally scheduled. . . . If I were directing the affairs of the Army," the Illinois Senator declared, "there is nothing I would like better than to be found guilty and convicted of bringing back the men from Europe quicker than was originally planned."

An Open Hearing—The speaker then "challenged" the statement by Senator Mead, quoted above, that planning and coordination would have cushioned the shock. He undertook to read a letter prepared for him by John J. Pelley, president of the A. A. R., setting forth the facts as to "redeployment" which, he explained, showed that no amount of planning would have enabled the railroads to cushion the shock of a flow of returning troops averaging 28,000 a week.

Senator Brewster, Republican of Maine, a member of the Mead committee, interrupted Senator Lucas to protest against this attack on the Mead statement, revealing that members of the committee, at the suggestion of General Franklin, speaking for the Army and of Colonel Johnson, were seeking a postponement of the public hearing. Senator Lucas expressed a desire for an open hearing, where the Army "should have an opportunity to make [illegible] of the unfavorable publicity emanating from the [illegible] which has been spread all over the country."

Senator Kilgore, Democrat of West Virginia, also a member of the Mead committee, then remarked that the committee's executive hearings had resulted in Colonel Johnson obtaining the information he needed to work out his plans, and that he preferred that nothing further be done. "All he asked," the Senator added, speaking of the O. D. T. director, "was to have a little peace and quiet until he could put the plans into effect."

W. P. B. Handicapped RRs—Several other Senators participated in the discussion, after which Senator Lucas proceeded to read Mr. Pelley's letter. He was interrupted, upon referring to the inability of the railroads to obtain new passenger cars during the war, by Senator Wheeler, Democrat of Montana, the chairman of the committee on interstate commerce, who remarked that, in his opinion, the railroads have been handicapped more than any other industry in the country because they have not been able to obtain W. P. B. priorities to build freight and passenger cars.

"During the time the railroads and the O. D. T. were asking for priorities in order to provide additional railroad facilities," the Montana Senator went on, "we were building railroad cars, it is true, but they were being shipped to South America, to European countries, and to other countries of the world because it was stated they were needed in various parts of the world to carry on the war. The railroads of the United States have been seriously handicapped by reason of the inability to secure cars and other equipment and facilities."

Some Discomfort Inevitable — Mr. Pelley's letter pointed out that the railroads, "using all available equipment, are carrying the men from the ports to their homes with no more than the occasional delays incident to so huge a transportation task." This "heaviest concentrated domestic transportation" movement of the entire war is not being accomplished without "criticism and complaint," he conceded, but "responsible officers of the armed forces and of the railroads have realized that no transportation task of this size could be accomplished so rapidly as this . . . without some difficulties and discomforts, even if all the resources of the railroads could have been devoted to this one task alone. . . .

"It would be fine to have more cars in which to carry [the soldiers] more comfortably, but permission to build the cars could not be obtained during the war, and the movement is to be made with what is at hand. The main thing is to get on with the job and get it done."

Following the withdrawal from regular service of Pullman cars on runs not exceeding 450 miles, the A. A. R. president explained, there were left in such service 2,544 out of a total of 6,797 Pullman-owned sleeping cars as of July 15. The remainder, 4,253 cars, is available for military service, though some must be deducted from both the military and regular allotments from runs to maintain service. In addition there were 1,237 troop sleepers in military service, making a total of 5,490 sleeping cars, or 68 per cent of the whole number available, [illegible] exclusively to the armed forces. The percentage of [illegible] available to the armed forces is still higher, he pointed out, as many of the cars remaining in regular train service do not accommodate as many persons as the open section type car.

No "Civilian" Trains—While regular trains are referred to often as "civilian" trains, there are no such trains running today, Mr. Pelley declared, as the regular trains are used to a large extent by soldiers traveling on duty but not in group movements, and by men on individual furloughs.

The procedure in handling special troop movements is for the Army or Navy to call on the railroads for the necessary trains, indicating whether sleeping cars or coaches will be required, according to the length of the movement. If sleeping cars cannot be furnished promptly as ordered, coach trains are made up, the equipment frequently being taken out of regular service. Mr. Pelley explained that "all eight cars in the widely publicized transcontinental troop train which was reported to have been made up of commuter type coaches were taken from regular inter-city trains of the New Haven, including such trains as the "Yankee Clipper," "Nathan Hale," and "Bankers Special." Six of these cars

came back from the Pacific coast in regular service, carrying revenue passengers, without complaint on their part.

Sleepers for P. W.'s?—Referring to the reported movement of German prisoners in sleeping cars, Mr. Pelley explained that this is done only under medical certification, and suggested that the widely-reported story may have resulted from the fact that one or more sleeping cars frequently is included in a prisoner-of-war train for the accommodation of American soldiers on duty as guards, "who have to sleep part of the time and work part of the time while in transit."

"It was known before the redeployment started that there are not enough sleeping cars in the country to do the job within the time available," Mr. Pelley concluded, "but every effort is being made both by the railroads and by the government agencies concerned to secure the maximum use of equipment. . . . All of us deeply regret that the needs of war convinced those in government who had final authority to determine the question, that it was not desirable to permit the railroads to secure the equipment needed to handle in this emergency the demands of traffic, both civilian and military, according to the normal peace-time standards of the railroads of this country."

A step which was expected to bring about some of the cooperation which the Mead committee had found lacking—but which Colonel Johnson bluntly told the committee had not been forthcoming, nonetheless—was a letter written July 18 to the Secretary of War by Fred M. Vinson, then director of the Office of War Mobilization and Reconversion, the post frequently referred to as "Assistant President." In general, this letter set forth the situation as to the Army's disclosure of its plans to the O. D. T. as Colonel Johnson outlined it to the committee. It did say, however, that the O. D. T. director "must be informed beforehand of the extreme fluctuations in the flow of troops to the United States, particularly as to any increase in the monthly expectations, and he should be consulted before any great changes upward or downward are decided upon by the War department."

War Dept. Not Heard—While Senator Lucas had expressed a desire to have representatives of the War department explain its side of the controversy in the Mead committee's public hearing, Colonel Johnson was the only witness heard. It was reported that the War department was prepared to accept an invitation to appear. Referring to this report, the committee counsel stated at the close of the hearing that the War department had been invited to have representatives present to give testimony in case they were needed, and they had been present. However, he added, the Army had not asked the committee for permission to testify, and it was not the committee's intention to call any other witnesses for public hearing, unless they specifically asked for permission to appear, in view of its conclusion that relief of the man-power shortage on the railroads would go far toward assuming their success in meeting the tasks of "redeployment."

Kansas Suspends Low Minimum on Livestock Carload

At the request of the Office of Defense Transportation, the State Corporation Commission of Kansas has temporarily suspended the 10,000-lb. carload minimum weight on livestock prevailing in that state, allowing the higher minimums prevailing under standard railroad tariffs to apply, as in other states, the O.D.T. has announced.

"The present shortage of livestock cars is the worst in transportation history," said O. D. T. Director J. Monroe Johnson, since these cars are used not only to haul cattle and small stock, but munitions, rough cargo and many perishable agricultural products, such as melons, as well. In addition, stock cars are being used for the movement of grain.

* * *

Photo by U. S. Army Signal Corps

Army Seeks Recruits for Railroads

The Chicago opening of the Army Service Forces Western Railroad Manpower Project, which is designed to aid the western roads in their efforts to recruit 65,000 badly needed workers, was marked by the presentation of a replica of a railroad spike to Chicago's Mayor, Edward J. Kelly. In the picture are: (left to right) R. T. Taylor, Railroad Retirement Board; Paul Jenkins, War Production Board; Lt. Col. A. B. Krim, chief of field organization, Western Railroads Manpower Project; Col. I. Sewell Morris, transportation officer, Sixth Corps Area; Lester Brown, War Manpower Commission; C. E. Johnston, chairman, Western Association of Railway Executives; Thomas McKean, Office of Defense Transportation; and Mayor Kelly.

Patterson Aghast at Furlough Proposals

(*Continued from page 172*)

2,000,000 men without falling below the strength which our military leaders believe necessary to insure the defeat of our last enemy completely and with minimum cost in American lives. We have promised our soldiers that these discharges will be made in accordance with the fair and impartial system which they themselves have recommended. We intend to keep that promise."

McNutt's Message—Meanwhile Paul V. McNutt, chairman of the War Manpower Commission, had made a statement by radio from Guam urging available men to seek employment on the railroads, thus following President Truman's lead in this respect. Mr. McNutt said: "After conferring with military leaders in the Pacific theater, I realize more than ever the importance and necessity for bringing every ounce of materiel and every man available to bear against the Japanese. American railroad workers have a vital role in redeploying troops and moving munitions to the Pacific ports. Every railroad worker now on the job should be urged to stay there and every experienced worker on railroads not now working in his occupation should apply immediately to his local United States Employment Service office. Railroad workers of America must help maintain the timetable for the defeat of Japan."

Supplementing the action of the W.M.C. in giving western railroads its top priority rating for manpower recruiting purposes, the War Production Board on July 24 announced that that agency had placed the same 17 western lines, and the Pullman Company, on its "national production urgency list" to facilitate that activity. The affected carriers were listed in *Railway Age* of July 21, page 109.

Western Fruit and Vegetable Shipments Above 1944

A July 19 radio address wherein the new Secretary of Agriculture, Clinton P. Anderson, emphasized current "trouble" in connection with the transportation of California fruits was followed on July 24 by an Office of Defense Transportation press release which reported that shipments of fresh fruits and vegetables from California "are showing a substantial increase over last year in spite of car shortages."

Secretary Anderson mentioned particularly the "serious situation" with respect to the transportation of "such things as oranges, lemons, and melons." The O. D. T. reported incomplete figures showing that rail shipments of melons from the Imperial Valley and Yuma and Salt River Valley amounted to 9,839 cars from January 1 to July 12, an increase of 1,002 cars, as compared with the same period of 1944. It added that from California and Arizona in the same period 55,632 carloads of oranges

and 12,640 carloads of lemons were shipped —increases, respectively, of 9,451 cars and 333 cars above 1944.

Meanwhile shipments of lettuce have totaled 4,561 cars from Arizona and 10,498 cars from California's Imperial Valley, the former being an increase of 1,509 cars and the latter a decrease of 1,062 cars as compared with last year. The decrease, O. D. T. explained, "was due to March rains which made it impossible to harvest the entire crop."

Rail shipments of potatoes from Kern County, Calif., up to June 30, were 21,228 cars, a decrease of 2,288 cars under the comparable 1944 period. This decrease was attributed to increased truck movements for the local trade area and for the armed forces at local camps and elsewhere.

The O. D. T. statement closed with another appeal to shippers and carriers "to increase the use of refrigerator cars for shipment to the Pacific Coast of nonperishable freight, not normally transported in refrigerator cars."

Secretary Anderson said that in view of the transportation situation, the Department of Agriculture had warned California grape growers "not to depend too much on eastern markets, but to process as much of their crop as possible where it grows." He also mentioned difficulties in connection with the transportation of potatoes and onions, and the need for more cars to move the grain crop. In the latter connection, Mr. Anderson said that O. D. T. had been working with his department to "help take the pressure off the railroads" by arranging for "the biggest grain movement program on the Great Lakes we have ever had."

He concluded his address with assurances that "no one will go hungry because of transportation difficulties." His department is "working closely" with O. D. T., the railroads and the Interstate Commerce Commission, and "you can be sure that the government and the railroads will do everything possible to deal with the food transportation problem."

No Exceptions to Travel Ban for Race Horses

Col. J. Monroe Johnson, director of the Office of Defense Transportation, has emphatically denied that there has been any "special dispensation" for the trotting meet at Goshen, N. Y., August 8, or for any other race event affected by the ban on transportation of race horses. The statement followed published reports that the O.D.T. had given permission to hold the meet at Goshen. Colonel Johnson said the order has not been and will not be relaxed during the present transportation crisis. There have been no permits issued or exceptions made to anyone, he said.

The O.D.T. director also said he did not approve of proposals to ship race horses by barge and that action may be taken to prevent such transportation if it becomes necessary.

Materials and Prices

The following is a digest of orders and notices that have been issued by the War Production Board and the Office of Price Administration since July 16, and which are of interest to railways:

Grading Equipment — The smallest types of tracklaying tractors and certain small types of self-propelled earth-moving graders are no longer subject to the distribution controls of the construction machinery order, L-192. Tracklaying tractors (22 drawbar H. P. and over) and graders of the self-propelled earth-moving type (14,000 lb. gross weight and over) are the types now appearing on List 2 of the order, together with cranes, draglines and shovels of designated types. Items on List 2 may be sold only on specific W. P. B. authorization for which application is made on Form WPB-1319. Such authorization need no longer be obtained to sell the Class V special size tracklaying tractors (having a drawbar rating of less than 22 H. P.) or small self-propelled maintainers and road patrols, W. P. B. pointed out. All other provisions of L-192 remain unchanged.

Hand Tools—A greater supply of mechanics' hand service tools will be available as a result of the relaxation of restrictions on the production and delivery by amendment of General Preference Order E-6. Complete revocation of the order was thought unwise at this time, since the industry has on its books a relatively large backlog of orders for certain types of tools, and members of the industry generally concurred in this opinion, W. P. B. said.

Under the amendment, the list of tools covered by the order has been reduced and exhibit A now includes: metal cutting snips and shears; slip and solid joint pliers; screw drivers; box, monkey, pipe, adjustable and socket wrenches.

Ball pein hammers, cold chisels and punches, metal cutting files, metal working punches, piston ring compressors, ring groove cleaning tools, spring testers, tool boxes and valve spring compressors have been dropped from the list. Production and delivery of these tools henceforth will be scheduled in accordance with PR-1 and other applicable W. P. B. orders and regulations.

Pastewater Paints—For packing pastewater paints, including resin emulsions, manufacturers hereafter may use 100 per cent of their 1941 usage of tinplate or terneplate cans, instead of 60 per cent of 1941 usage as formerly allowed, W. P. B. said. This action was taken through amendment of item No. 128 of Schedule A of order No. M-81. Quotas for other paint products in the item remain at 60 per cent of the base period usage.

Prices

Bituminous Coal—Amendment 143 to MPR-120, effective July 16, provides that all shipments of bituminous coal from a mine or preparation plant, regardless of method of delivery or class of buyer are subject to the ceiling prices established for producers.

Crossties—A 17 per cent average over-all increase in Eastern producers' ceiling prices for railroad crossties is provided by Amendment 3 to Third RMPR-216. The increase becomes effective July 26, and averages 16 cents per crosstie. The increases range from 2½ cents to 20 cents per tie, according to species, sizes and the production area.

Ceiling prices previously were the highest prices charged in December, 1942, and the supply produced annually was adequate until the fall of 1944 when the rate of production took a drop below annual requirements, O. P. A. said. The O. D. T. asked O. P. A. to authorize increases in ceiling prices of railroad ties to meet a shortage that had become serious, and a like request was made by the W. P. B.

The increases are applicable to tie production in all states east of the one-hundredth meridian, except the Dakotas. The 100th meridian bisects the Dakotas, Nebraska, Kansas, Oklahoma and Texas.

Grading Equipment—Establishment of uniform dollar-and-cent ceilings on the hourly rate that may be charged for operating and maintenance services supplied with the rental of tractors, shovels, graders and other construction and road maintenance equipment, together with a formula for automatic determination of combination fully operated rates and bare rental rates, has been announced by O. P. A. These published rates will make it unnecessary for indivdual establishments to file rates for a considerable group of equipment rentals. The rates are at the levels that have been established for individual applicants based on operating costs in effect on March 31, 1942, and are the levels that now prevail in the industry. Amendment 19 to MPR-134 is effective July 19.

Gypsum Lath—Amendment No. 86 to Order A-1 of MPR-188, effective July 13, provides a new method of pricing ⅜ in. gypsum lath. Producers in California, Nevada and Montana are allowed to add actual freight charges to a uniform f. o. b. mill price when shipment is made to Washington and Oregon. This f. o. b. mill price is established at $13.95 per M sq. ft. for ⅜ in. gypsum lath sold by mills on the West Coast.

Inspection of Lumber — A ceiling charge of $25 per day, effective July 16, has been established for inspection of Southern pine and hardwood lumber when the work is done for the O. P. A. the agency announced recently. Formerly, the ceiling price for this service was $25 per day for the first day of work and $15 per day for each succeeding day for each inspector.

One year ago, O. P. A. said, a contract was entered into by the agency with the Southern Pine and National Hardwood Lumber Association's inspection bureaus for the services of inspectors at a ceiling of $25 for the first day of work and $15 for each succeeding day. Recently, these bureaus reported that they were losing money on the transaction. The new ceiling, O. P. A. said, will do no more than compensate the bureaus for their actual expenses, such as hotels, meals, travel and other items.

Southern Pine—To help maintain production of sizes of Southern pine lumber essential to the armed services, Amendment No. 9 to Second RMPR-19, effective July 23, provides increases in mill ceiling prices for sizes most in demand, with compensating decreases in other less necessary sizes. These changes were made at the request of the W. P. B. and the Central Procuring Agency of the U. S. Corps of Engineers, which acts as procuring agency for military requirements.

1. All grades of shortleaf Southern pine one inch boards are increased $1 per M f. b. m. At the same time, all grades of shortleaf 1¼ inch and 1½ inch are decreased $1.

2. Ceiling prices for shortleaf Southern pine 2 in. by 4 in. have been decreased 50 cents per M f. b. m. However, in straight carload shipments of 10-ft. and longer, all grades, a ceiling price of $4 per M f. b. m. over the new ceiling price (or $3.50 over the price effective prior to this action) is authorized for the 90-day period beginning July 23.

3. The ceiling price of 2 in. by 8 in. shortleaf Southern pine, all grades, is to continue unchanged for the 90 days beginning July 23, after which the ceiling prices for No. 2 and No. 3 grades will be increased $1.50 per M f. b. m.

4. Specific dollar-and-cent additions for both shortleaf and longleaf "Square Edge Siding" are discontinued, and sellers hereafter are to apply to O. P. A. for special prices.

5. Specific dollar-and-cent additions are being eliminated for odd and fractional lengths four feet and over in common boards and dimension and also, odd or fractional widths in dimension; sellers hereafter are to apply to O. P. A. for special prices.

6. The premiums on boards shown in Table 1, footnote 5, of $8 per M f. b. m. for No. 1 Common, 85 per cent or 90 per cent heart facial area; $6 for 85 per cent heart cubical content, and the premium on dimension shown in Table 2, footnote 7, of $12 for No. 1 Common, 85 per cent heart facial area and $8 for No. 1 Common, 85 per cent heart cubical content, are discontinued, and sellers hereafter are to apply to O. P. A. for special prices.

Vitrified Clay Pipe—Amendment 12 to RMPR-206 and Amendment 88 to Order A-1 under MPR-188, effective July 21, provides an increase to nine per cent from eight per cent in the additions that may be made to base ceiling prices for manufacturers' sales of vitrified clay sewer pipe and allied products produced in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, the District of Columbia, Virginia, West Virginia, Ohio, Kentucky, Michigan, Indiana and certain zones in Illinois and Wisconsin.

GENERAL NEWS

General Motors to Build Astra Liner

Contract for revolutionary new train will be let to existing carbuilders

A startling new type of Diesel-powered passenger train, known as the Astra Liner, creating a new conception of comfort, enjoyment and utility in railroad travel, will be built by General Motors as quickly as war material and manpower conditions permit, according to C. R. Osborn, vice-president, in charge of the Electro-Motive division. The train will be exhibited throughout the United States. Contracts for construction of the cars following the G-M designs will be let to existing car-building companies, Mr. Osborn stated.

The announcement was made coincidental with the first demonstration-test run of the Vista Dome experimental passenger car by the Burlington Lines, at Chicago on July 23. The Vista Dome car was remodelled by the Burlington, following some features of the G-M Astra Liner designs, particularly the principal item thereof which is a steel-ribbed, glass-enclosed dome in the roof from which passengers may view scenery in all directions.

"Our sole purpose is to contribute to the post-war success of American railroads with which Electro-Motive division is so closely identified," said Mr. Osborn. "We have taken steps to protect the designs, but only for the purpose of preventing someone tying them up to restrict their usage. We have informed railroads and car-building companies that they may freely use the designs.

"For the past five months, at Chicago, we have been privately showing the Astra Liner designs, in the form of scale models and drawings, to top railroad officials. Executives of more than 50 Class I railroads have studied the designs. Nineteen of the roads were represented by their presidents. Ralph Budd, president of the Burlington Lines, was the first to proceed with an experimental try-out of the dome idea.

"The reaction of these railroad leaders has been highly favorable. In view of their general agreement that the Astra Liner represents a long step forward in the advancement of railroad travel enjoyment and comfort, we have reached the decision to build four demonstration cars. It is felt that a further contribution to rail transportation can be made by carrying through the complete engineering and construction of such a train, in conformance to the ideas developed by the original designers.

"The Astra Liner designs are the work of the General Motors Styling Section at Detroit. Under the direction of Harley Earl, vice-president, artists, sculptors and designers of the Styling Section were given a free hand to suggest improvements in train travel that they themselves would enjoy as passengers.

"The results were screened through an engineering committee which accepted those deemed in accordance with Interstate Commerce Commission requirements and susceptible of successful engineering and operation."

[A description of the type of facilities to be included in this train will appear in the August 4 issue.—Editor.]

Scale Model of the Astra Liner Cars Designed by General Motors Styling Section—Right to Left Are the Lounge, the Sleeper, and the Diner

Ops Seek Pay Rise, More "Featherbeds"

Would penalize night and Sunday work—demand more pay for not working

The train service brotherhoods are serving on the railroads a demand for an increase in pay of 25 per cent or $2.50 per "basic" day, whichever exceeds. They are also asking for such far-reaching additions to "featherbed" working rules that a railroad personnel officer, when asked for a list of these demands, said it would be simpler, perhaps, to name the few things around the railroads they have not asked for. The only item he could think of that they hadn't asked for, he added, was ownership title to railroad property.

The unions want all territorial differences in their pay removed, with the maximum rates, of course, taken as standard. They want 100 miles or 5 hours made the "basic" day for passenger train service employees, instead of the present "basic" day of 150 miles or 7½ hours. In short-turn-around (commuter) service, they ask for a basis of 6 hours on duty in a "spread" of 8 hours, compared to the present standard of 8 hours in a spread of 10.

Time-and-one-half for overtime, instead of straight time as at present, is asked for passenger service employees (freight service overtime being already compensated at time-and-one-half). They want motormen on multiple-unit trains to be paid on the basis of the aggregate weight of all motor cars in a train. Minimum pay for enginemen is asked at the level of compensation for a locomotive weighing 250,000 lb. on drivers.

Minimum daily wages for road and yard service are demanded—the former to be at the minimum mileage of a customary assignment. (That is, if a man is on a turn which regularly gives him 150 miles daily, then he must be given that pay for every day even though, because of some unusual circumstance, his actual mileage should be less.)

If, after 8 hours' rest, a yard crew is called for a second trick in 24 hours, the unions demand that time-and-a-half be paid for the second trick worked.

Switch tenders, so that demand reads, should have their pay raised to equal that of yard brakemen. Yard foremen's and conductors' differential should be pushed up above the pay of yard brakemen by at least $1.50 per day.

The unions ask that practically all train and engine service except that involving high-speed through trains be paid for at the local rate. Mine runs, work trains,

(*Continued on page 185*)

Federal Barge Lines Had Big '44 Deficit

"Other income" fails to offset operating loss as it did in '43

The government-owned Inland Waterways Corporation reported a consolidated net deficit of $385,545 for 1944, according to the annual report made public last week by the Department of Commerce. This compares with a 1943 net income of $178,012 which was realized when an operating deficit of $120,871 was more than offset by various items of "other income," including $243,543 profit on the sale of temporary cash investments and interest income of $91,873. In 1944 the operating deficit was $463,446, while the "other income" was only $123,984.

The report was submitted to Secretary of Commerce Wallace by John S. Powell, who was acting president of the corporation from August 15, 1944, until the recent appointment of South Trimble, Jr., as successor to former President Chester C. Thompson.

"Savings" Claimed—After reporting the 1944 deficit, Mr. Powell followed through promptly to make the usual estimate of the 1944 "savings to the public" as a result of I. W. C. operations, such "savings" being the difference between I. W. C. rates and "the charges that would have been paid had the traffic moved all-rail." On this basis, the 1944 "savings" are put at $1,733,300; while the "savings" from June 1, 1924, when I. W. C. began operations, until December 31, 1944, have been $42,765,000.

Operating revenues in 1944, at $8,692,687, were up $392,570 from 1943, but expenses increased $714,057. Among other factors contributing to the higher costs was a wage increase amounting to $265,000 which was authorized by the War Labor Board. Also the corporation's traffic movement remained "badly out of balance," and unusual flood conditions were encountered.

Meanwhile, Mr. Powell stressed I. W. C.'s contribution to the war effort, citing its work of towing combat craft. "The value of the great inland waterway system of this country has probably never been better demonstrated than in the performance of this service during the national emergency," he said. "Innumerable seagoing vessels were constructed at inland shipyards. Although this corporation handles only a fraction of the craft so constructed, its contribution in this respect since the beginning of the war, when reduced to the number of units, represents the delivery of a formidable navy to deep water. It is indicative of the important role played, not only by this corporation but by other inland water carriers, in the furtherance of the war effort."

Barges Too Slow—It is conceded later on, however, that a contributing factor to the poor 1944 financial showing was the "wartime need for the use of faster modes of transportation." Also, it is revealed that I. W. C. has been doing some post-war planning. Its traffic, engineering, and accounting officers have made a joint study of the possibility of using Navy landing craft in commercial inland waterway operations. Another study to determine the most efficient and economical types of vessels is being made by the engineering department.

Concluding paragraphs of the report show that Southern governors are not the only ones who can argue freight-rate cases without being before the Interstate Commerce Commission. Mr. Powell indicated how he thinks the commission should decide No. 26712, Rail and Barge Rates, which has been under consideration since March, 1925.

Advises the I. C. C.—"Upon the outcome of" [that proceeding], he said, "the future of water transportation, as envisioned by Congress, will depend. This proceeding involves an attempt on the part of rail carriers in general to eliminate the differential from joint rates, and to apply rates equal to or higher than all-rail rates for transportation over barge and rail routes. The outcome of this proceeding is of vital importance to the water transportation industry.

"A decision by the commission eliminating differential rates may in a large measure destroy water transportation, which cannot exist on port-to-port traffic only."

The accompanying report of Guy Bartley, secretary-treasurer, includes the usual list of expenses, not included in the accounts, which I. W. C. would have had to pay if it were privately owned. The list includes: Personal injury claims of employees paid by U. S. Employees Compensation Commission, $12,659; postage, $20,000; difference between commercial and government rate on telegrams, $1,560. It is also conceded that some taxes would have to be paid on terminal properties, but "information received from reliable sources indicates that privately owned carriers operating on inland waterways of the United States are not subject to taxes on their floating equipment." And 86 per cent of I. W. C.'s investment in water lines facilities consists of floating equipment.

Proposes New Transportation of Explosives Act

The Transportation of Explosives Act would be rewritten by the provisions of S. 1290 which Chairman Wheeler of the Senate committee on interstate commerce introduced "by request" on July 21. The Interstate Commerce Commission recommended such legislation in its 1943 and 1944 annual reports.

In making its 1943 recommendation the commission said that the revision was due because of "important developments relating to this subject which have occurred in the 22 years since the last revision of these statutes." The bill would give the commission broad authority to prescribe regulations for the transportation of explosives by land, water, or air carriers, including private carriers and freight forwarders.

The authority would cover transportation in interstate and foreign commerce in time of peace; and in time of war it would cover intrastate transportation also.

Western RRs Prepare For Record Traffic

Expect 1,800,000 men monthly in organized troop movements

The western railroads are now preparing for a large increase in the monthly total of 900,000 soldiers, sailors and marines being handled in organized troop movements. These lines are now entering the second stage in the redeployment of troops from the European theatre to the Pacific theater of operations and are moving men, who have completed their furloughs, from their homes to the gathering centers and thence to camps for further training. Within about six weeks the western lines will enter the third phase of this movement, when these men have completed their training and are ready for movement to the Pacific ports.

Based on an estimate of 350,000 men per month being returned from Europe and no decrease in the present total of 900,000 men per month being handled in other moves, it seems likely that commencing in October, the Western lines will be called upon to handle a minimum of 1,800,000 men per month in organized troop movements alone, without any allowance for furlough travel, or roughly double the present military traffic.

At present, the bulk of the troop movements are being handled through the California ports, thus placing the majority of the burden on the Southern Pacific, Santa Fe, Union Pacific and Western Pacific. In general, it may be said that the army movements tend to flow through San Francisco and northern California ports, while navy passenger traffic moves via San Diego, Los Angeles and other southern California gateways. Recently there has been somewhat increased use of the north Pacific ports such as Portland, Ore., and Seattle, Wash., but because of the longer water hauls from such points and the consequent increase in turnaround time for shipping, the use of these ports has been, and will continue to be, held to a minimum until such time as bases in Japan itself may be secured, when reduced distances would then make these cities the most desirable ports of embarkation. Because of this fact, the three northern transcontinental lines are not being used to the same extent as the California lines. Furthermore, because of other pressure on the lines linking the Pacific Northwest with California, it is not practicable to route troops via the northern transcontinental lines thence down the Pacific coast to California ports.

According to Mr. H. W. Siddall, chairman, the Western Military Bureau, has been granted full authority to route troop movements in the territory west of Chicago and St. Louis, with instructions to conserve to the utmost motive power, crews and car-days, and with due regard to other operating conditions. Accordingly, the bureau has called on the western lines to re-examine their schedules for troop trains and to quote the best schedules that can be made consistent with safety, regularity, and

minimum interference with war freight movements. At the same time, revised routing practices have been inaugurated so as to reduce to a minimum the passenger car-days required to perform a given movement.

Insofar as freight movement is concerned, there has been some easing in westward traffic during July. A recent check showed that for the first 10 days of the month, the daily average freight movement to Pacific ports was 5,100 cars, whereas it is now about 4,900 cars per day, it being 4,943 on July 24. On the other hand, the eastward movement of perishables from the Pacific coast is currently running 12 per cent over 1944. The increased perishable loadings are requiring an average movement of 1,200 empty refrigerator cars westward daily, plus nearly 400 loaded under the terms of I. C. C. Service Order 104. At the present time, the primary difficulty of the western lines, with respect to freight movement, is to move the large eastward volume of perishables being offered daily in addition to other loads and an average of 2,800 empty cars daily.

As is the case with troop movements, westward military freight tends to seek the California rather than the Northwest ports, although here again there is evidence of increasing use of the ports of the North Pacific coast. In fact, the peak movement through Oregon and Washington cities occurred in June, although the peak freight movement passing through California ports occurred in May. To date, the railroads serving the Pacific Northwest have not been strained to the extent of those entering California.

According to a statement by W. F. Kirk, western director of the Office of Defense Transportation, at present, on the seven western lines serving the Pacific Coast, there is an average of seven trains daily being delayed at terminals two hours or more for crews, and 40 trains per day being held for power. Mr. Kirk attributes the delay chargeable to waiting for power to insufficient men to turn the available locomotives promptly, rather than an actual shortage of motive power itself. "The available capacity of the western railroads is not being used to its maximum capacity due to shortage of man-power," Mr. Kirk said.

Some idea of the magnitude of the job of the western railroads are faced with in moving men to the Pacific theater of operations is contained in the July issue of the "Green Light," monthly newspaper of the Denver & Rio Grande Western. During June, according to the paper, the Rio Grande handled 243 special military trains, an average of eight per day, the majority of them westward movements. Continuing, the paper adds that this total does not include special cars handled on regular passenger trains. In addition to the heavy volume of military passenger traffic, it is revealed that for the first six months of 1945, the number of loads handled was about 100,000 in excess of the same period in 1944.

Burlington Test Run of Vista-Dome Car Is Success

On a test run between Chicago and Minneapolis, Minn., the new "Vista-Dome" car, a unit equipped with a second deck completely glass-enclosed, placed in operation by the Chicago, Burlington & Quincy, proved itself a complete success. Carrying a delegation of Burlington officers, cameramen and newspapermen as well as representatives of the major press services, the Vista-Dome car went through its paces on July 23, attached to the Burlington's No. 45, leaving Chicago at 10 a.m., and arriving at Minneapolis at 9:55 p.m. The special guests aboard left the train at Oregon, Ill., where they were guests at a luncheon provided by residents of that community.

Freight Car Loading

Loadings of revenue freight for the week ended July 21 totaled 882,323 cars, the Association of American Railroads announced on July 26. This was a decrease of 945 cars or 0.1 per cent below the preceding week, a decrease of 19,769 cars or 2.2 per cent below the corresponding week last year, and a decrease of 1,515 cars or 0.2 per cent below the comparable 1943 week.

Loading of revenue freight for the week ended July 14 totaled 883,268 cars and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

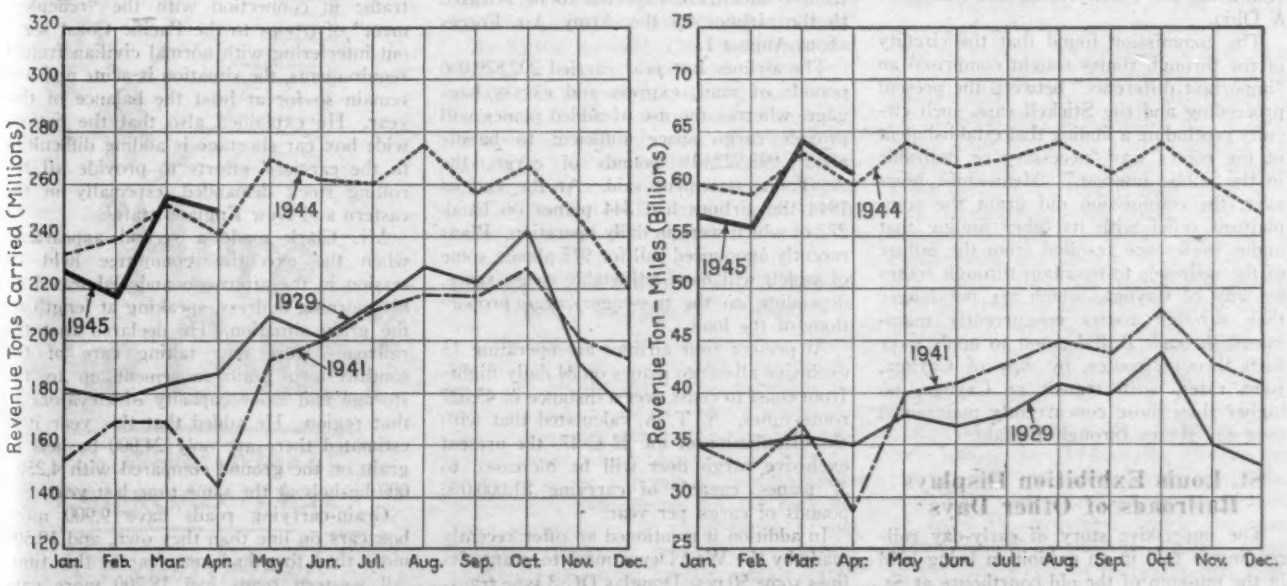
For the Week Ending Saturday, July 14

District	1945	1944	1943
Eastern	159,628	162,428	166,173
Allegheny	197,341	198,918	185,188
Pocahontas	54,156	57,641	57,770
Southern	124,859	125,488	115,663
Northwestern	133,345	140,195	145,221
Central Western	139,985	142,220	133,171
South Western	73,954	77,011	74,149
Total Western Districts	347,284	359,426	352,541
Total All Roads	883,268	903,901	877,335
Commodities			
Grain and grain products	65,645	62,536	62,504
Live stock	13,293	14,576	13,941
Coal	175,081	179,450	176,249
Coke	14,661	14,249	12,720
Forest Products	43,502	48,519	46,249
Ore	77,255	86,729	89,671
Merchandise l.c.l.	104,877	101,476	97,840
Miscellaneous	388,954	396,366	378,161
July 14	883,268	903,901	877,335
July 7	726,404	744,347	808,630
June 30	893,741	897,210	852,082
June 23	876,442	880,311	760,930
June 16	872,674	877,493	868,286
Cumulative Total, 28 weeks	22,871,617	22,933,449	22,017,342

Guaranteed Wage Idea to Be Studied by Latimer

Murray W. Latimer, chairman of the Railroad Retirement Board, has been commissioned by a subcommittee of the War Mobilization and Reconversion Board to make a study of guaranteed wage proposals. The study program was announced by Eric Johnston, president of the Chamber of Commerce of the United States and chairman of the subcommittee, at a July 25 press conference in Washington, D. C.

Mr. Johnston explained that the study was suggested to the board by the late President Roosevelt, and that the board appointed the subcommittee to follow through on the idea. Other members of the subcommittee are Philip Murray, president of the Congress of Industrial Organi-



Revenue Tons and Revenue Ton-Miles—1945 Compared with 1929, 1941 and 1944

zations, Mrs. Anna Rosenberg, New York regional director of the War Manpower Commission, and Albert Goss of the National Grange.

Mr. Johnston stated that Mr. Latimer will be in charge of the subcommittee's research division while Arthur S. Meyer, chairman of New York State's Board of Mediation, will be in charge of the conference division, which will hold conferences with interested labor and management groups. Mr. Latimer, who participated in the press conference, stated that he will remain on the Retirement Board. He also said that the railroad labor organizations are interested in the guaranteed-wage idea.

Make New Lamp Agreements

By mutual agreement, the General Electric Company has cancelled its agreement with Westinghouse Electric Corporation in the field of electric lamps, effective August 1. A new agreement has been entered into under which each company grants to the other a simple non-exclusive license under its lamp patents and patent application in existence on August 1, without royalty payments and limitations on quantities or prices. Licenses for future patents are reserved.

I. C. C. Will Consider Circuity in Requiring Through Routes

In applying the doctrine of the so-called Stickell case (No. 28647) wherein it interpreted the Transportation Act of 1940's through-routes provisions and prescribed through routes short-hauling the Pennsylvania, the Interstate Commerce Commission will consider the circuity of routes it is asked to prescribe for the convenience of shippers. This was revealed in the commission's report in the No. 29035 proceeding involving the complaint of Beacon Milling Company, Inc., assailing combination rates it is required to pay on grain moving from points west of Buffalo, N. Y., to Cayuga for processing and thence beyond to eastern destinations over routes embracing the Pennsylvania and Baltimore & Ohio.

The commission found that the circuity of the through routes sought comprised an "important difference" between the present proceeding and the Stickell case, such circuity precluding a finding that establishment of the routes was "necessary or desirable in the public interest." Meanwhile, however, the commission did grant the complainant relief with its other finding that undue preference resulted from the failure of the railroads to maintain through routes by way of Cayuga, which are not longer than through routes concurrently maintained through Buffalo, and to apply over such through routes, by way of Cayuga, joint rates, with transit at Cayuga, no higher than those concurrently maintained over the routes through Buffalo.

St. Louis Exhibition Displays Railroads of Other Days

The impressive story of early-day railroading is told in an exhibition being held in the museum of the old courthouse at St. Louis, Mo., under the name of "Railroads of the West." The exhibit, which places special emphasis on the birth of the old Pacific railway at St. Louis in 1866, includes such old-time equipment as locomotive bells and whistles, train models built to scale and with movable parts, timetables including one which went into effect on April 29, 1894, for the Missouri Pacific, and a collection of locomotive photographs depicting models built as far back as 1828. The exhibition will be open until September 15.

Grain Loadings Report

Loadings of grain and grain products, both in the United States as a whole and in the western districts, continue to show an increase as compared with last year, according to the Office of Defense Transportation's weekly summary for the week ended July 14. For the first 28 weeks of this year, the nation-wide total was 1,364,050 cars, as compared with 1,329,059 for the same period last year, an increase of 34,991 cars or 2.6 per cent. For the West alone, the figures were 931,356 cars for the first 28 weeks of this year as compared to 897,368 in the corresponding 1944 period, an increase of 3.8 per cent.

For the United States, loadings in the week ended July 14 were 65,645 cars, as compared to 62,536 for the equivalent 1944 week, an increase of 5 per cent. In the western districts, for the same week, 1945's 46,157 cars was an increase of 4,173 cars, or 9.9 per cent, over the comparable 1944 figure.

More Cargo Capacity Planned by Air Lines

Nineteen domestic airlines are setting up equipment and schedules that will raise their cargo carrying capacity in the immediate post-war years by five fold over the 1944 level, according to the Air Transport Association of America. This estimate is based on the amount of additional cargo space that will be available in the 409 new passenger planes on order or for which the airlines held options, plus 22 C-47s (Skytrains) which are expected to be released to the airlines by the Army Air Forces about August 1.

The airlines last year carried 202,879,006 pounds of mail, express and excess baggage, whereas the use of added planes will provide cargo space sufficient to handle about 995,922,619 pounds of cargo, the A. T. A. statement said. At the end of 1944 the airlines had 344 planes on hand, 272 of which were in daily operation. Plans recently announced call for 975 planes, some of which will have adjustable cargo space, depending on the passenger-cargo proportions of the load.

At present four airlines are operating 15 exclusive all-cargo planes on 34 daily flights from coast to coast over a distance of 45,627 route miles. A. T. A. calculated that with the distribution of the 22 C-47s the present exclusive cargo fleet will be increased to 37 planes, capable of carrying 81,000,000 pounds of cargo per year.

In addition it mentioned an offer recently made by the War Department to grant airlines some 50 new Douglas DC-3 type transports from current Army production. The planes "are expected to greatly augment the present cargo service."

Meanwhile A. T. A.'s Aircraft Requirements Committee and Committee on Passenger and Cargo Handling and Servicing Equipment are working on problems relating to all-cargo planes, loading and other matters involving the handling of cargo; and aircraft manufacturers "are making an extensive study of plans for all-cargo planes preparatory to announcing additional new types of craft for use in the post-war period." Also, "various methods of pick-up and delivery of air cargo are being studied by both airlines and manufacturers."

Plane Flies 9 Tons of Freight from Chicago to West Coast

As the first step in a proposed air freight service between Chicago and the Pacific coast, the American Airlines on July 11 dispatched a plane from Chicago to Los Angeles, Cal., carrying more than nine tons of gas stoves. The plane used was a Consolidated Vultee C39, built specially for freight carrying, with a maximum load capacity of 18,500 lb.

The flight, according to officials of the air line, was launched as a means of determining standards and rates for air freight service, and was completed in 10½ hours. At the same time it was pointed out that considerable weight and expense were eliminated due to the fact that, because of the nature of plane travel, it was possible to ship approximately half of the gas ranges without the necessity of crating them.

Two Mid-West Board Committees Hold One-Day Chicago Meeting

Featured by a record attendance, a one-day meeting of the executive committee and the railroad contact committee of the Mid-West Shippers Advisory Board was held on July 12 at the Palmer House in Chicago.

The principal speaker of the day was R. E. Clark, manager, Closed Car Section, Association of American Railroads, who told his listeners that while he believed the railroads could handle westbound military traffic in connection with the "redeployment" of troops to the Pacific Coast without interfering with normal civilian freight requirements, the situation is acute and will remain so for at least the balance of this year. He explained also that the nation-wide box car shortage is adding difficulties to the carriers' efforts to provide all the rolling stock demanded, especially in the eastern and New England states.

Mr. Clark made a second appearance when the executive committee held its session in the afternoon and elaborated on his morning address, speaking at length on the grain situation. He declared that the railroads were now taking care of the southwestern grain movement up to the storage and labor capacity of elevators in that region. He added that this year it is estimated there are only 24,000 bushels of grain on the ground compared with 4,250,000 bushels at the same time last year.

Grain-carrying roads have 9,900 more box cars on line than they own, and 10,500 more than they had last year at this time. All western roads had 18,700 more cars than they own, while eastern and southern

roads have 32,000 less cars than their ownership. The discrepancy between the 18,700 and 32,000, which are for Class I roads, is explained by the unreported number of cars on Canadian roads and short lines, Mr. Clark said. About 5,000 covered hopper cars are being used to augment the grain movement, he added.

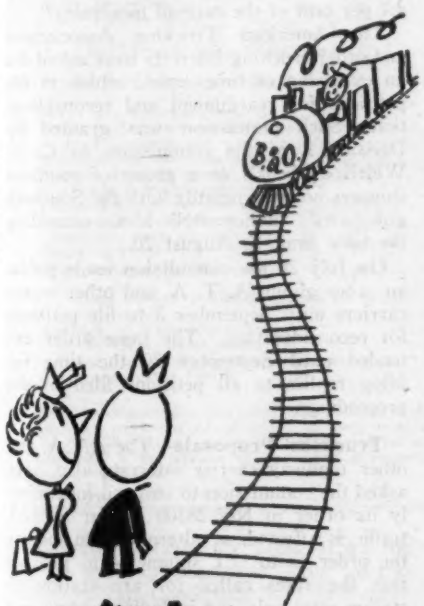
The board's executive committee voted to approve the principles of the amended Bulwinkle bill which would clarify the status of railroads and other carriers as to the anti-trust laws.

Railroads Not "Fuddy-Duddy" Finds Kibitzer on B. & O.

Don Herold, cartoonist and writer, after a look behind the scenes of the Baltimore & Ohio, has authored and illustrated a stimulating little booklet (now being distributed by the B. & O.), entitled "Here She Comes, or What Makes a Railroad Tick."

Always "train crazy," but admittedly like countless other Americans who look upon trains as "old shoe," Mr. Herold now is convinced "it would be a good thing if the railroads could all shut down just one week out of every year to give the country a taste of how life would be without 'em."

His own "interesting adventure," made possible "because I knew a feller who knew a feller who knew R. B. White," has given him a "fresh fondness for railroads," he admits. And following his interview with



"Here She Comes"

or WHAT MAKES A RAILROAD TICK

by don herold

B. & O. trains get thorough physical exams almost every day

the B. & O.'s president, he embarked on a whole new set of wonders—he went "train snooping."

"I've been having the time of my life," writes Mr. Herold, "riding engines, kibitzing in signal towers, browsing around locomotive repair shops and talking to trainmen," who, he observes "have the most stupendous toy in the world to play with, and the most stupendous responsibility in the world to fulfill—and they eat it up."

Don Herold was fascinated by the "thousand little things" that he saw that "have to go right to make the trains run on time." His discoveries ranged from the miracles of dispatching, to keeping the roadbed "smooth as a bowling alley," to storing the diner, and to keeping locomotives and cars continuously "in the pink." Railroad's aren't "operated by magic," he discovered.

And for "inventiveness and ingenuity," they have not stood still the past quarter century. For the folks "inclined to think of railroads as sort of old-fashioned, with long red flannel underwear," Mr. Herold asks: "How do you think the railroads have done such a job in this war with so much less equipment and so many fewer employees?" There's where the ingenuity comes in, the writer remarks. "When you stop to think of it," he observes of their war-time record, "the performance of the railroads in the continental United States has been one of the wonders of our time."

As to the surprises coming in improved railway travel, "we ain't seen nothin' yet" —"we'll have sweeter, slicker, rail travel than we've ever known before."

Impressed with his own experience, the cartoonist asks the reader to look at trains with a fresh and friendly eye" suggesting a "Be-Thankful-to-Railroads" week among travelers would not be amiss.

Reorganized Roads Not Allowed "Same Taxpayer" Relief

Following extended debate, the Senate on July 19 passed the so-called tax adjustment bill (H. R. 3633), after accepting the recommendation of its finance committee that it eliminate the House-approved provision under which new railroad corporations set up as a result of reorganization proceedings could benefit for tax purposes from carry-overs or carry-backs of net operating losses or unused excess profits credits accumulated by predecessor bankrupt companies. The committee's action was noted in *Railway Age* of July 21, page 109, while the House ways and means committee's explanation of the provision was reported in the July 14 issue, page 77. The House accepted the Senate's version of the bill July 20, and it went to the President in that form.

As explained on the Senate floor by Senator George, Democrat of Georgia, chairman of the finance committee, the provision affecting reorganized railroads was stricken from the bill "without prejudice," so that more study may be given the question and hearings may be held on it, "inasmuch as it does affect the actual tax liability of the railroads, and inasmuch as it does actually involve the payment out of the [federal] treasury of certain sums of money by way of refunds."

Reasons for Objections—Among the reasons why the committee preferred to study the matter further, Senator George said, were these: (1) Its provisions are limited to railroads, with no application to steamship or bus companies that might be in the same position; (2) only a few of the 28 principal railroads listed in reorganization since 1939 would benefit; and (3) the terms of approved reorganization plans might in some cases have been altered, giving more relief to junior creditors, or even stockholders, of the old company, if the courts had contemplated adjustments of this nature.

Senator Johnson, Democrat of Colorado, a member of the finance committee, argued against eliminating the relief provision. "We vote billions without hesitation for the stabilization of far-away countries," he said, "but when it comes to railroads in this country trying to get out of receivership, we say, 'You cannot pass this way. You must stay in receivership.' . . . That is what the committee amendment does. It keeps railroads in receivership. . . . The present situation results in rank discrimination. . . .

"For the life of me I cannot understand why the treasury is so anxious to keep railroads in receivership. Why not get them out? Why not get them on a solid, sound, and firm basis of operation, so that they can do their part in the economy of this country and render the service which they were organized to render? The treasury says that we must keep them in receivership. It provides an incentive to keep them in receivership. . . . The treasury takes the position that if those railroads remain in receivership they are entitled to the benefits of those provisions, that so long as they remain in receivership they will receive those benefits, or that if they never went into receivership they could receive the benefits, or that if they can come out of receivership and do not have to write a new charter they can receive the benefits. But the treasury takes the position that if they have to write a new charter when they write off their bad debts and their bad stock, they may not receive the benefits of those provisions."

Foresees More R. R. Relief.—Senator LaFollette, Wisconsin Progressive, entered into the discussion to assert that only five reorganized roads would benfit from the provision which the committee wished to eliminate, though others in the final stages of reorganization might later come within its scope. The total tax

reduction for the five companies would be about $8,500,000, he said, of which the Wabash would get some $6,000,000. Moreover, he declared, "We have been exceedingly generous with the railroads in our tax legislation, . . . and they are going to be coming here, I have no doubt, under the next tax bill, and ask for further relief on their deferred maintenance. They can whip a willing horse to death if they do not watch their step."

Would Require Reports from Carrier Associations

Various Interstate Commerce Act amendments, including a proposed extension to carrier associations of the Interstate Commerce Commission's authority to require reports and inspect records, are embodied in S. 1291, which Chairman Wheeler of the Senate committee on interstate commerce introduced "by request" on July 21. The foregoing proposal, which would affect such organizations as the Association of American Railroads, American Trucking Associations, National Association of Motor Bus Operators, American Waterways Operators, and Freight Forwarders Institute, has been recommended in recent I. C. C. annual reports, as have various other provisions of the bill.

The control over railroad associations would be accomplished by amendments to paragraphs (1) and (5) of section 20, while like changes covering motor, water, and forwarder associations, respectively, would be made in sections 220, 313, and 412.

Proposed amendments to paragraph (22) of section 1, paragraph (10) of section 5, and paragraph (1) of section 20a would remove from commission jurisdiction the extension, acquisition, or operation [as well as the construction or abandonment as already provided] of "spur, industrial, team, switching, or sidetracks, located or to be located wholly within one state," or "street, suburban, or interurban electric railways, or any portion thereof, except those which are operated as a part or parts of a general steam railroad system of transportation of freight or interchange standard steam railroad freight equipment with steam railroads for transportation subject to this part."

A proposed amendment to paragraph (2) of section 5 would eliminate the requirement that a public hearing shall be held in all merger and acquisition cases "where carriers by railroad are involved." Under proposed changes in paragraph (6) of section 20, the commission's authority to inspect records of persons furnishing cars to railroads and express companies would be extended to include persons furnishing cars "to shippers through rental agreements with shippers or otherwise."

Proposed amendments to paragraph (12) of section 20a would rewrite the prohibition against personal benefits to carrier officers or directors in connection with the disposition of the carrier's securities. Proposed changes in section 222 would add penalty provisions covering the failure of motor carriers or brokers to keep records and file reports as prescribed by the commission.

Proposed amendments to subsection (c) of section 411 would permit a director, officer, employee, or agent of a common carrier to have an interest in a freight forwarder upon authorization by the commission after a showing "that neither public nor private interests will be adversely affected thereby." Other proposed changes in section 411 would give the commission jurisdiction over consolidations, mergers, or acquisitions of forwarding companies.

June's Operating Revenues up 2.9 Per Cent

From preliminary reports of Class I roads representing 80.6 per cent of total operating revenues, the Association of American Railroads has estimated that the June gross totaled $662,497,642, an increase of 2.9 per cent above the $644,008,089 reported for June, 1944. Estimated June freight revenues were $488,330,954, compared with $469,436,617, an increase of 4 per cent. Estimated passenger revenues were $122,231,914, compared with $129,110,639, a decrease of 5.3 per cent.

More Petitions for Delay of Class Rate Adjustments

The railroads in the western district (not including the Alton, Illinois Central, St. Louis-San Francisco and Wabash) have filed a petition with the Interstate Commerce Commission asking for a postponement of the effective date of the commission's order in the No. 28300 proceedings, in which interim increases in class rates in Official territory and decreases in and between all other territories east of the Rocky mountains were prescribed, in order that the case may be reopened for reargument and reconsideration.

Interim Rate Adjustment Postponed Until Nov. 30

The Interstate Commerce Commission on July 26 made public a July 25 order postponing from August 30 until November 30 the interim class-rate adjustment required by its recent decision in the No. 28300 proceeding. As noted in the *Railway Age* of July 21, page 113, the railroads asked for a postponement until April 1, 1946, but the commission's order denies that petition insofar as it sought postponement beyond November 30.

Meanwhile the order adds to the original order new provisions which have the effect of modifying all outstanding commission orders to the extent necessary to permit the required adjustment to be made by the publication of tariff supplements.

Will Deplete Revenues—This action was taken after thorough and matured study of the commission's decision, the petition indicated, and this study has led to the conclusion that the order will result in a reduction of the western lines' revenues, not only to the extent of some $10 million annually during the effect of the interim adjustments, but further, by an "alarming amount," under the permanent uniform system contemplated in the order. This depletion of income will be produced not only by the lower class rates, but by inevitable reductions in revenue under exception and commodity rates as well, it was asserted.

The commission's majority's decision in this case was erroneous, the western roads contended, in that it did not accord them proper rates under the commission's own findings in the proceedings, particularly those dealing with relative costs. Further, they said, "the commission has not explained in its report why it is necessary to reduce rates on commodities other than those involved" in the investigation undertaken in 1939.

Cost Studies Ignored—"The majority has erred in not following the principles that have heretofore guided the commission in its determination of reasonable and otherwise lawful rates," the petitioners argued. "They have labored under a misapprehension as to the consist of traffic in the west as compared with that in the east. They have entirely cast aside the increased costs of handling traffic in the west as compared with that in the east. They have misconstrued the amendments to the Transportation Act of 1940. . . .

"No explanation has been made by the commission why it was necessary for it to depart from the customary standards usually employed in the fixation of reasonable and otherwise lawful rates. Nor how it can legally require practically a nation-wide rate adjustment based on evidence which, generally speaking, pertains to only 4.1 per cent of the carload movement."

The American Trucking Associations and other trucking interests have asked for an extension of time within which to file petitions for reargument and reconsideration. Such permission was granted by Division 2 of the commission to C. E. Widell on behalf of a group of southern shippers not in sympathy with the Southern governors' "uniformity" idea, extending the time limit to August 20.

On July 26 the commission made public an order giving A. T. A. and other motor carriers until September 3 to file petitions for reconsideration. The same order extended until September 30 the time for filing replies to all petitions filed in the proceedings.

Truckers' Proposals—The A.T.A. and other highway carrier interests also have asked the commission to suspend indefinitely its order in No. 28300 insofar as l.c.l. traffic is affected, or alternately to modify the order as to l.c.l. shipments to provide that the rates called for are station-to-station rates only, not including pickup and delivery service, and that they are without prejudice to publication by the truckers of "non-discriminatory and reasonable" door-to-door rates.

Petitions asking the commission to reconsider and modify its findings in the class rate proceedings also have been filed for the states of Kentucky, Ohio, and Indiana, in addition to those mentioned in *Railway Age* last week. These agree in seeking elimination of the requirement that Official territory class rates be increased 10 per cent *ad interim*, and ask for reargument in order that other modifications may be discussed. Kentucky also has suggested that the commission require establishment of class rates for points in that state on the

Selected Income and Balance-Sheet Items of Class I Steam Railways

Compiled from 132 reports (Form IBS) representing 136 steam railways
(Switching and Terminal Companies Not Included)

Income Items	All Class I Railways: For the month of April 1945	For the month of April 1944	For the four months of 1945	For the four months of 1944
1. Net railway operating income	$91,904,980	$89,670,936	$339,854,339	$353,732,739
2. Other income	12,708,120	13,960,957	56,313,040	55,894,371
3. Total income	104,613,100	103,631,893	396,167,379	409,627,110
4. Miscellaneous deductions from income	2,538,380	4,350,512	10,048,375	12,553,355
5. Income available for fixed charges	102,074,720	99,281,381	386,119,004	397,073,755
6. Fixed charges:				
Rent for leased roads and equipment	11,936,055	11,950,471	49,363,248	48,886,746
Interest deductions[1]	31,669,972	34,448,553	128,589,455	138,196,826
Other deductions	106,974	154,274	430,267	543,225
Total fixed charges	43,713,001	46,553,298	178,382,970	187,626,797
7. Income after fixed charges	58,361,719	52,728,083	207,736,034	209,446,958
8. Contingent charges	2,803,819	2,390,516	10,875,058	9,494,136
9. Net income	55,557,900	50,337,567	196,860,976	199,952,822
10. Depreciation (Way and structures and Equipment)	27,715,878	26,602,876	110,166,298	105,831,704
11. Amortization of defense projects	19,860,733	15,171,050	77,619,661	58,340,997
12. Federal income taxes	93,601,216	99,490,624	375,961,065	407,144,476
13. Dividend appropriations:				
On common stock	4,105,279	275,982	27,890,594	25,864,407
On preferred stock	1,281,646	858,123	7,008,081	6,636,157
Ratio of income to fixed charges	2.34	2.13	2.16	2.12

Selected Asset and Liability Items	All Class I Railways: Balance at end of April 1945	Balance at end of April 1944
17. Expenditures (gross) for additions and betterments—Road	$63,576,451	
18. Expenditures (gross) for additions and betterments—Equipment	89,632,801	
19. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	562,640,904	$587,192,414
20. Other unadjusted debits	476,422,145	446,407,981
21. Cash	1,133,249,543	1,075,776,283
22. Temporary cash investments	1,856,052,287	1,767,436,778
23. Special deposits	221,817,869	192,394,075
24. Loans and bills receivable	401,087	218,843
25. Traffic and car-service balances—Dr.	46,588,406	47,353,377
26. Net balance receivable from agents and conductors	140,513,415	143,222,347
27. Miscellaneous accounts receivable	626,123,477	668,007,957
28. Materials and supplies	610,825,359	575,604,695
29. Interest and dividends receivable	35,409,513	25,459,009
30. Rents receivable	1,981,442	1,768,501
31. Other current assets	51,982,212	60,308,890
32. Total current assets (items 21 to 31)	4,724,944,610	4,557,550,755
40. Funded debt maturing within 6 months[2]	131,243,961	103,509,103
41. Loans and bills payable	11,485,000	13,687,426
42. Traffic and car-service balances—Cr.	193,118,570	211,732,795
43. Audited accounts and wages payable	446,023,324	465,497,431
44. Miscellaneous accounts payable	198,508,903	131,237,699
45. Interest matured unpaid	54,467,057	50,323,708
46. Dividends matured unpaid	3,757,975	3,195,301
47. Unmatured interest accrued	58,996,917	62,245,545
48. Unmatured dividends declared	15,802,842	8,209,549
49. Unmatured rents accrued	27,986,459	27,176,951
50. Taxes accrued	1,741,059,802	1,846,940,109
51. Other current liabilities	160,694,248	91,605,780
52. Total current liabilities (items 41 to 51)	2,911,901,097	2,911,852,294
53. Analysis of taxes accrued:		
U. S. Government taxes	1,600,371,445	1,701,173,884
Other than U. S. Government taxes	140,688,357	145,766,225
54. Other unadjusted credits	674,347,544	461,278,284

[1] Represents accruals, including the amount in default.
[2] Includes payments of principal of long-term debt (other than long-term debt in default) which will become due within six months after close of month of report.
Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.

Chesapeake & Ohio not higher than the Official territory class rates. The Central Territory Rate Conference has joined other organizations in protesting the Official territory increases.

Would Bring Minimum Wage Up to 75 Cents Per Hour

Senator Mead, Democrat of New York, has introduced for himself and nine other senators a bill (S. 1282) to provide for upward revision of the 40-cents-per-hour minimum wage prescribed in the Fair Labor Standards Act. Under the bill, the minimum would be increased immediately to 65 cents and it would rise to 75 cents two years after the enactment date.

In like fashion the maximum work week would be reduced from 48 hours to 40 hours. Railroad employees would remain subject to the minimum-wage provisions but exempt from the maximum hours provisions.

Meanwhile the Senate committee on education and labor has received from one of its subcommittees a favorable report on Senate Concurrent Resolution 11 which would make a Congressional declaration to the effect that any wage rate less than 65 cents per hour should be considered by the National War Labor Board as substandard. The resolution would advise the National Mediation Board as well as W. L. B. of the Congressional view, the subcommittee explaining that while N. M. B. has no authority to increase wages, it was nevertheless felt that the board should be guided in its wage-proceeding activities by the definition of substandard wages.

Ops Seek Pay Rise, More "Featherbeds"

(Continued from page 179)

wrecking trains and all unclassified service would be paid for at the local rate.

Penalties for Nights and Sundays—A differential of 10 cents per hour is asked for all assignments which begin during evening and night hours. Time-and-one-half is sought for work on Sundays and holidays.

The unions want extra pay for road crews for time delayed at initial and final terminals, even though the complete run is made at a mileage rate faster than that at which pay shifts to an hourly basis. Furthermore, they want extra pay for delays en route, even though total time on the road is within the standard number of hours for the mileage run.

They want uncompensated time "held away from home terminal" reduced to 12 hours, and they do not want the hours paid for waiting around added, as at present, to the return trip; instead they want the waiting time to be paid for independently, and regardless of the speed made on the homeward trip.

The foregoing summary gives a general idea of the comprehensiveness of the new demands—but it comprises only about one-third the total number of items.

Rains Cause Heavy Damage in Northern New Jersey

Rains of nearly cloudburst proportions on the night of July 22, falling on already water-soaked terrain, in north New Jersey and extending into Rockland county, New York, and the Berkshire mountain area of Massachusetts, caused millions of dollars of damage to property and several drownings on July 23. The area hardest hit was northern New Jersey, where flood waters of the Passaic, Saddle and Ramapo rivers, exceeding all high-water marks since the flood of 1903, disrupted or delayed service for periods varying from 2 to 3 hours up to 20 hours on various lines of the Delaware, Lackawanna & Western, the Erie and the New York, Susquehanna & Western.

The Delaware, Lackawanna & Western had no bridges affected, but had a number of washouts on its Boonton main line, over which most of its freight traffic and its steam suburban service operates. The most serious break was along the Passaic river near Paterson, N. J., where both main tracks were washed out in several places over a distance of about four miles. These were all relatively short washouts, however, and service was restored over one main track in about 12 hours, and over the other in less than 20 hours.

During the emergency, some Lackawanna freight traffic was routed over the electric suburban main line through Summit, N. J., and the remainder was held until one track was restored to service. Shuttle service was operated both east and west of the break on the Boonton line to take care of commuter service, those living west of the break in the line being taken to Denville and transferred to electric suburban trains to New York via Summit.

In addition, Lackawanna tickets for passengers bound to and from Paterson were honored on the Erie.

On the Erie there was no damage west of Suffern, but this road had serious trouble between Suffern and Jersey City, N. J. However, no bridges were affected and it never completely lost the main line, always having one track open. At Allendale, N. J., where there are four tracks, the roadbed was washed out from under the two outside tracks and a third track was temporarily weakened by flood waters of Saddle River. All but one track was back in service the morning following the flood and the fourth track was restored the afternoon following. At Hawthorne, N. J., the Passaic river washed out a hole in the Erie's eastbound main track about 10 ft. deep and 35 ft. long, while at Paterson, an interlocking plant was entirely under water and the westbound track was out of service a few hours.

The Erie also had serious trouble on several branch lines. The worst of these was a large stone masonry arch in a high embankment, about one mile west of Great Notch, N. J., on the Greenwood Lake branch, which was washed out leaving a hole in the embankment 50 to 60 ft. high and about 200 ft. long. This same stream did a large amount of damage in the town of Little Falls, N. J. On this line no traffic has been restored west of Great Notch and bus service has been installed between Great Notch and Little Falls to bridge the gap still out of service. Other minor slides and washouts occurred on the Newark, Piermont and Haverstraw (Thiells, N. Y.) branches, but these were all restored to service the day following the washouts.

The New York, Susquehanna & Western was also badly hit west of Paterson. Several mud slides were reported and a number of washouts, one of which was 15 ft. deep and 30 ft. long. None of the bridges on this line was lost although a low, deck girder double-track bridge over Saddle river at Rochelle Park, N. J., was in danger for a time. Three cars of coal were left standing on one track of this bridge to hold it down, leaving the other track open for traffic. Commuter service on this road was out for five hours on July 23 between North Hawthorne, N. J., and Jersey City, and was out all that day west of North Hawthorne.

The New York Central was not seriously affected by the same rains which wrought such heavy damage in northern New Jersey, except for a minor washout between Rochester, N. Y., and Candaluga on the Auburn branch. For several days previous to this period, however, this road had had considerable trouble due to minor slides and water. On July 19, traffic on the West Shore line was disrupted for several hours by mud and water over the tracks just above Newburgh, N. Y., and also between Cornwall and West Point. On the same day, a mud slide on the main line just below New Hamburg, N. Y., covered tracks 1, 2 and 3, but this was cleared up completely in six hours. On July 20 at West Albany (N. Y.) hill, mud was washed down on the tracks and a slow order was required for several hours. On July 22, similar mud slides occurred on the North Adams (Mass.) branch of the Boston & Albany and on the West Shore branch between Kingston (N. Y.) and Montgomery.

The Central Railroad of New Jersey, the Lehigh Valley and the Pennsylvania were not affected seriously by the storm which struck northern New Jersey, on July 22, but these roads had had lines in trouble about a week previously by a cloudburst and high water in the Lehigh and Delaware rivers in the vicinity and west of Phillipsburg, N. J., and also near Frenchtown, N. J., on the Pennsylvania.

Emergency Board Reports

A report by a National Railway Labor Panel emergency board containing findings and recommendations with respect to 27 separate requests for changes in existing rules, or for new rules, which were in dispute between the Southern Pacific and the Brotherhood of Locomotive Engineers, has been made public by the White House. The board was composed of James H. Wolfe, chief justice of the Supreme Court of Utah; Gordon S. Watkins, dean of the college of letters and science, University of California at Los Angeles; and A. G. Crane, former president of Wyoming State University.

Only one point at issue involved an increase in rates of pay; this was denied by the board as contrary to the wage stabilization program, but without prejudice to its renewal after the end of the war, or upon modification or elimination of the "Little Steel" formula.

Most of the questions were of local or special application only, and in most instances the board recommended that the proposals not be adopted. One request which was not approved was for reduction of helper engines to two in number, with a minimum speed through tunnels of 20 m.p.h., "suitable" respirators and smoke deflectors. Another, also not approved, was that road engines in yard service be equipped with yard engine tenders. Also rejected were proposals that engineers after six hours without opportunity to obtain a hot meal notify dispatchers of intention to eat without power of dispatcher to countermand intention; that the company provide "adequate" wash, change and writing facilities at terminals (though it was suggested that a joint survey of facilities be made, with a view to their improvement); and that the maximum age for hiring engineers be made 56 years.

The board approved a provision for payment of earnings an engineer would have made if found wrongfully discharged, with a $8.79 per day minimum.

Report on Erie Dispute—The emergency board appointed by President Truman on June 30 to investigate the controversy which brought a Brotherhood of Railroad Trainmen's strike threat to the Erie, has reported on the seven matters remaining in dispute when the case was referred to the board. With respect to claims whereby passenger trainmen are demanding a total of approximately $100,000 in extra pay (a day's pay for each move) for handling their trains between the Jersey City, N. J., station and the coach yards there, the board recommended that the road pay all such claims which are found to be based on facts analogous to those involved in a "basic" National Railroad Adjustment Board decision.

Another demand was for a new rule granting passenger conductors an arbitrary allowance of extra pay for making out reports. This the board rejected, holding that "whether the making out by the conductor of his report is done en route or at the final terminal, he is paid under the existing rules for the time thus required." A third demand, also rejected by the board, called for abrogation of a "memorandum of understanding" with respect to the division of road and yard work. The other four claims on which the board made findings involved the application of Adjustment Board awards to local situations.

Members of the board were: Chairman Leif Erickson, former justice of the Supreme Court of Montana; Ridgely P. Melvin, justice of the Maryland Court of Appeals; and Robert G. Simmons, chief justice of the Supreme Court of Nebraska.

Other Cases—The board created by the President on June 16 to investigate a wage dispute on the Georgia & Florida has recommended that the demand for so-called standard rates of pay be rejected, but it has approved an increase of four cents per hour. The employees involved in this dispute were represented by the four train-service brotherhoods, and members of the board were James P. Hughes, justice of the Supreme Court of Indiana, Eugene L. Padberg, judge of the St. Louis, Mo., Court, and Russell Wolfe, Philadelphia, Pa., attorney.

The National Railway Labor Panel board appointed to investigate a dispute between the United Brotherhood of Carpenters & Joiners of America and the Washington, Idaho & Montana, a lumber company subsidiary, has rejected demands of the union for establishment on the railroad of a basic 40-hour week and a basic minimum wage of 82½ cents per hour, as approved by the War Labor Board for employees of the parent lumber company. Holding that the railroad and lumber operations are separate, the emergency board went on to find that the W. I. & M. employees are paid as much or more than employees of other railroads, and that general railroad practice did not support the 40-hour-week demand.

Members of the board were: Chairman Richard F. Mitchell, former justice of the Supreme Court of Iowa; Herbert B. Rudolph, justice of the Supreme Court of South Dakota; and Ernest M. Tipton, justice of the Supreme Court of Missouri.

The board appointed by President Truman on May 24 when the Brotherhood of Locomotive Firemen & Enginemen threatened to call a strike on the Illinois Central has recommended working rules designed to settle the dispute which related to the seniority date, as engineer, of a fireman promoted to the engineer's roster, and the conditions under which an engineer, who has retained his seniority rights as a fireman, would be permitted to return to firing service. Another issue involved the claim of an employee whose case was submitted to the National Railroad Adjustment Board and later withdrawn, it being mutually understood by the parties that such withdrawal was "with prejudice" to the claim.

On that issue, the emergency board found that further adjudication of the claim had been foreclosed.

The controversy was appraised generally by the board as a jurisdictional dispute between the B. of L. F. & E. and the Brotherhood of Locomotive Engineers with the I. C. a "neutral." After making its specific findings the board added to its report "supplemental observations" which included the assertion that the Railway Labor Act provided adequate remedy for settlement of the dispute "without the necessity of creating a national emergency in time of war." Noting, however, that the brotherhoods have declined to avail themselves of Railway Labor Act machinery in jurisdictional disputes, it went on to recommend that the unions reach an agreement "creating a private agency empowered to dispose of such cases."

Members of the board were: Chairman Huston Thompson, Washington, D. C., attorney; Colonel Grady Lewis, also of Washington; and Curtis G. Shake, former justice of the Supreme Court of Indiana.

I.C.C. Bureau Reports Truckers' Rate Division Practices

An extensive investigation of the practices of truckers in the division of revenues on joint hauls shows that such practices "leave much to be desired," and that "the divisions which some carriers or groups of carriers receive are so out of line with the general standards reflected in existing practices as clearly to be unreasonable." These conclusions were reached in a study, Statement No. 451, of the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission, released last week "as information," without having been considered or adopted by the commission.

The 328-page report is the result of an investigation undertaken to provide background for the administration of the emergency order of the commission (No. M-1, issued June 8, 1942) requiring war diversion of freight by common carrier truck lines to others, and suggesting "informally" bases of division to be applied as an alternative to a formal order. No formal order prescribing bases of divisions has been necessary, but the study has progressed so that it provides information upon which such an order could be based, and also affords a foundation upon which motor carriers can consider the subject and its bearing on their post-war situation, it was explained.

Methods Used—The study classifies the methods used in the division of revenues as follows: (1) mileage, where the division is in proportion to each trucker's share of the total mileage; (2) rail short line, where the shortest rail basing point distance is the controlling factor; (3) rate prorate, where the division is in the ratio of the local rate of each carrier to the sum of such rates; (4) combination, an average of the percentages under the mileage and rate bases; and (5) arbitrary prorates, not related to any standard of mileage, rates or revenues. These five methods are subject to variations that add further complexities and inconsistencies, the report indicated. "Many angles of divisions are obscure to the carriers themselves," it pointed out. "Small and even some large carriers accept whatever divisions their connections give them, without benefit of means of checking what they get or of otherwise asserting their claims. 'Shopping' for a low division 'bid' before a shipment is turned over is not unknown; furthermore, controversies frequently develop over the applicable divisions after shipments have moved. Different treatment sometimes is accorded connections for identical services and pressures are exerted, by small carriers as well as larger ones, to secure favorable divisions when opportunity offers."

Difficulties Admitted—Continuing, the report observed that "there has not been a crystallization of opinion respecting the methods of division best adapted to the needs of the industry. This list of objectionable features is offered in full appreciation of the difficulties of the subject and of the relative immaturity of the motor trucking industry. It could be lengthened."

The study was undertaken by the research section of the commission's Bureau of Motor Carriers before that section was transferred to the Bureau of Transport Economics and Statistics, and has been carried out under the direction of C. S. Morgan, in his capacities as former assistant director of the Bureau of Motor Carriers and now as chief carrier research analyst. Others who participated in the preparation of the report were E. V. Breitenbach, former chief of accounts, Theodore A. Fetter, associate economic analyst, Mortimer W. LaFever, transport economist, and Fred W. Amadon, associate engineer.

While those responsible for the study refrained from setting forth specific conclusions, beyond general expressions of the nature already outlined, they did summarize the data accumulated and derive certain observations from them, as a guide to "orderly consideration" of the questions awaiting solution.

When the study was made, interchange traffic accounted for 30 to 35 per cent of the tonnage handled by Class I common carrier truckers handling general commodities, as compared to 73 per cent for rail carriers, it was noted. Moreover, and again in contrast to the rail situation, joint truck traffic is preponderantly in less-than-truckload lots, with only 3.3 per cent of the shipments analyzed weighing 10,000 lb. or more. Another contrast with rail practices is that substantially all joint haul truck shipments were physically interchanged between vehicles, with each carrier performing a line haul.

Rate prorates were used on about 54 per cent of all shipments studied, arbitrary prorates on 29 per cent, mileage prorates on 10 per cent, rail short line on 5 per cent, and combinations on 2 per cent. However, some sections of the country used one method, and others another, to a preponderant extent.

Up to Truckers—"The problem of divisions is largely one for the carriers themselves to wrestle with and to work out through agreements," the report went on to say. "The objectives, aside from consideration of relative costs, should be a greater degree of uniformity and definiteness of divisions than now exists in order that there may be as much fairness as possible as between carriers, that the time and clerical labor consumed in applying divisions may be minimized, and that all carriers may know that they are receiving the divisions to which they are entitled under arrangements to which they are parties. . . . Motor carriers, with more limited operations than those of the railroads, need greater flexibility in working out special adjustments fitted to their individual conditions. Their greater vulnerability to unfavorable divisions practices makes an inflexible and general method of dividing revenue less adapted to their needs than it is in the case of railroads."

Supply Trade

American Car & Foundry Co. Annual Report

The 46th annual report of the American Car & Foundry Co. and wholly-owned subsidiaries for the fiscal year ended April 30, 1945, made public on July 21, shows net earnings of $6,335,141 after charges and taxes, including amortization of expenditures for war plant facilities, and after provision for renegotiation refunds. This was equal, after preferred dividends, to $7.18 per common share and compared with net earnings of $5,591,832 in the 1944 fiscal year. Gross sales aggregated $199,755,179 compared with $218,834,838. Federal income and excess profits taxes, less estimated post-war credits on excess profits taxes of $1,696,800, are estimated at $17,411,174, compared with $17,427,770, after estimated post-war credits of $1,684,530, in 1944. Consolidated earned surplus as of April 30, 1945, was $37,511,456 against $34,700,964 on April 30, 1944. Current assets amounted to $131,601,695 and current liabilities to $90,054,666 as compared with $138,077,007 and $104,452,148 in 1944.

In his letter to the stockholders, Charles J. Hardy, chairman, stated that work on the company's books was in excess of $208,000,000 of which $160,000,000 was war work. Contracts are in the making for many thousand freight cars to be purchased by the Government and supplied for use in the regions devastated by the European war, and the company expects to get its share of this business. In the domestic field, Mr. Hardy said the needs of the railroads for equipment remain pressing and to a great extent unrelieved.

Templeton Kenly & Co. has been awarded the Army-Navy "E" for its contribution to the war effort.

Frank B. Nugent has been appointed representative in the northwest territory with headquarters in St. Paul, Minn., for the **Schaefer Equipment Company** of Pittsburgh, Pa.

Walter H. Radeke, formerly service manager of the **Gould Storage Battery Co.,** Depew, N. Y., has joined the **Peerless Equipment Co.,** as service engineer, with headquarters at Chicago, servicing Gould storage batteries in railway service.

James L. Ray has been appointed head of the gas and steam turbine engineering department in San Francisco, Calif., of the

Joshua Hendy Iron Works, Sunnyvale, Calif. Mr. Ray formerly was chief gas-turbine design engineer of the Allis-Chalmers Manufacturing Company.

F. M. Gunn, manager of the Pullman Car Works of the **Pullman-Standard Car Manufacturing Co.,** has been promoted to assistant to the president, with headquarters as before at Chicago. **Harry B. Reed,** assistant manager of the plant, has been advanced to manager, succeeding Mr. Gunn.

Raymond M. Fox, acting manager, has been appointed manager of works of the Butler, Pa., plant of the **Pullman-Standard Car Manufacturing Company.** Before his transfer to Butler, Mr. Fox was manager of works of Pullman-Standard's Hammond, Ind., plant for six years and in

Raymond M. Fox

this capacity directed its conversion from a freight car shop to war work. He has been in the railway carbuilding business for 39 years. He joined Pullman-Standard in 1929 as an engineer in its Michigan City, Ind., plant. He was transferred to the Hammond plant in 1937 and a year later was appointed manager of works there.

OBITUARY

P. T. Ryan, who retired in 1937 as assistant general manager of the Pullman Company, died at his home in St. Louis, Mo., on July 13.

William H. Bryant, general sales manager of Joseph T. Ryerson & Son, Inc., with headquarters at Chicago, died at his summer home in Iron Mountain, Mich., on July 23.

TRADE PUBLICATIONS

AMSCO MANGANESE STEEL.—A 32-page bulletin, No. 1144-N M, entitled Non-Magnetic Applications for Amsco Manganese Steel, has been issued by the American Manganese Steel Division of the American Brake Shoe Co., Chicago Heights, Ill. This bulletin, well illustrated and attractively printed in two colors, describes several railroad applications for manganese steel where freedom from magnetism, in addition to the ability to withstand shock, is important. In addition, it tells of numerous other applications for manganese steel, and gives a brief description of how the material is made.

Equipment and Supplies

Railroads Ordered 8,992 Freight and 308 Passenger Cars

There were 8,992 freight cars and 308 passenger-train cars ordered by the railroads during the first six months of 1945. Freight car orders comprised 3200 box, 3200 gondola, 1,786 hopper, 551 flat, 50 pulpwood, 15 air dump and 190 caboose cars and were allocated 3,817 to contract builders and 5,175 to railroad shops.

The backlog on order and remaining to be shipped for domestic service at June 30 amounted to 33,332 freight cars of which 30,510 were for the railroads, 2,139 for private car lines and industrial companies and 683 for Government agencies. Of the total, 23,005 were scheduled for building by contract car builders and 10,327 in railroad shops.

Included are 19,931 box, 4,224 hopper, 5,958 gondola, 834 flat, 1,343 refrigerator, 530 tank, 188 air dump, 218 caboose, 50 pulpwood, 19 stock and 37 miscellaneous cars. The majority of these cars, 25,472, are scheduled for delivery during the final six months of this year, as the schedules are now set up.

RAILROAD ORDERS FOR FREIGHT CARS
First Six Months, 1945

Railroad	No.	Class	Capacity	Month Ordered	Builder
Atlantic Coast Line	2	Air Dump	.....	February	Austin-Western
Bangor & Aroostook	50	Hopper	140,000	April	Bethlehem Steel
	50	Pulpwood	100,000	May	Magor Car
Chicago, Burlington & Quincy	25	Cov. Hopper	140,000	March	Company Shops
Chicago Great Western	25	Caboose	.....	April	Pullman-Standard
Chicago, Milwaukee, St. Paul & Pacific	35	Cov. Hopper	140,000	January	Company Shops
	500	Flat	100,000	January	Company Shops
	550	Gondola	100,000	April	Company Shops
	25	Caboose	.....	April	Company Shops
	650	Gondola	100,000	June	Company Shops
Chicago, Rock Island & Pacific	500	Box	100,000	March	Pullman-Standard
Clinchfield	1,000	Hopper	100,000	March	Amer. Car & Fdy.
Colorado & Wyoming	50	Gondola	140,000	February	Mount Vernon
Donora Southern	50	Hopper	140,000	February	Amer. Car & Fdy.
Erie	100	Caboose	.....	January	Company Shops
	700	Box	100,000	June	Amer. Car & Fdy.
Illinois Terminal	50	Flat	100,000	January	Amer. Car & Fdy.
	4	Caboose	.....	March	Company Shops
Kansas City Southern	150	Hopper	140,000	March	Pullman-Standard
	50	Cov. Hopper	140,000	March	Pullman-Standard
Lehigh Valley	15	Caboose	.....	April	Company Shops
Manufacturers	1	Caboose		May	Mount Vernon
Missouri-Illinois	50	Box	100,000	April	Amer. Car & Fdy.
Missouri-Kansas-Texas	300	Box	100,000	January	Company Shops
Missouri Pacific (for International-Great Northern) (For St. Louis, Brownsville & Mexico)	200*	Box	100,000	April	Pullman-Standard
	50	Cov. Hopper	140,000	April	Amer. Car & Fdy.
	200	Box	100,000	April	Pullman-Standard
Monogahela Connecting	50*	Gondola	140,000	March	Pittsburgh Bridge & Iron
Montour	1	Hopper	140,000	June	Amer. Car & Fdy.
New York Central (for Pittsburgh & Lake Erie)	1,000	Gondola	140,000	January	Despatch Shops
Norfolk & Western	1	Flat	140,000	January	Company Shops
	250	Box	100,000	May	Company Shops
Pennsylvania	500	Box	100,000	January	Company Shops
	300	Cov. Hopper	140,000	June	Company Shops
St. Louis Southwestern	100	Gondola	100,000	March	Company Shops
	25	Cov. Hopper	140,000	April	Amer. Car & Fdy.
Seaboard Air Line	13	Air Dump	80,000	January	Magor Car
Texas & Pacific	50	Cov. Hopper	140,000	April	Amer. Car & Fdy.
Union	300	Gon. Bodies	100,000	June	Company Shops
Union Pacific	500	Auto	100,000	May	Pullman-Standard
Wabash	500	Gon. Bodies	100,000	March	Company Shops
	20	Caboose	.....	April	Company Shops
Total	8,992				

* Order originally placed in company shops in October, 1944—later cancelled.

RAILROAD ORDERS FOR PASSENGER CARS
First Six Months, 1945

Railroad	No.	Class	Month Ordered	Builder
Atchison, Topeka & Santa Fe	7	Postal	June	Amer. Car & Fdy.
	18	Mail-Bag.	June	Amer. Car & Fdy.
	16	Lunch Ctr.-Diner	June	Budd
Atlantic Coast Line	2	Coach	January	Budd
	1	Coach	February	Budd
	39	Coach	June	Budd
Bangor & Aroostook	1	Baggage	May	Amer. Car & Fdy.
Chicago, Rock Island & Pacific	53	Various	June	Pullman-Standard
Florida East Coast	20	Coach	June	Budd
Great Northern	5	Pass.	April	Pullman-Standard
Illinois Terminal	8†	Coach	February	St. Louis Car
Pennsylvania	65	Coach	January	Company Shops
	10	Dining	January	Company Shops
	5	Dorm.-Bag.	January	Company Shops
	5	Dorm.-Bag.	May	Company Shops
	5	Obs.-Lng.-Buff.	May	Company Shops
Richmond, Fredericksburg & Potomac	10	Coach	April	Budd
Seaboard Air Line	8	Coach	April	Budd
	30	Various	April	Budd
Total	308			

† Multiple-unit electric cars.

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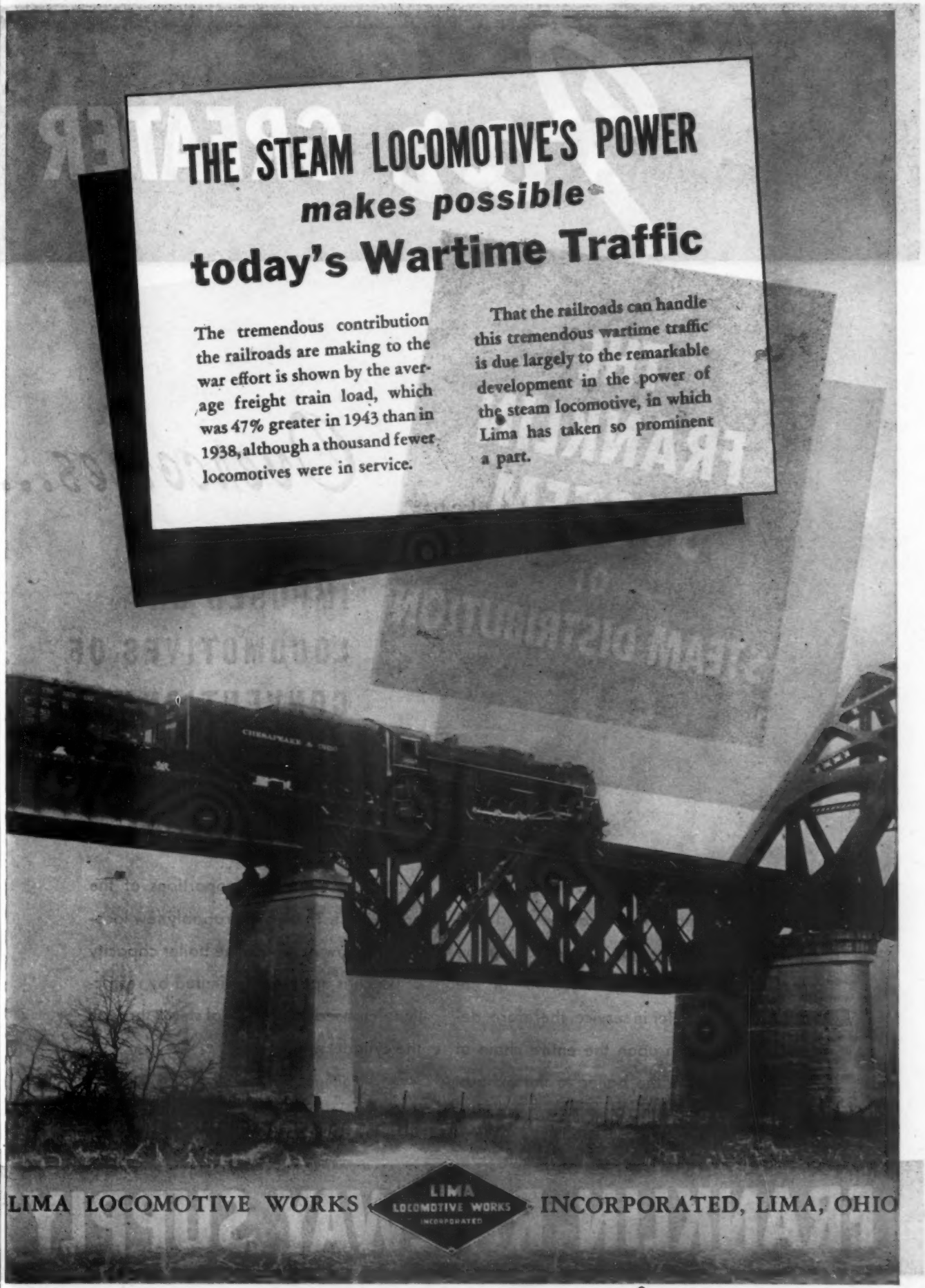
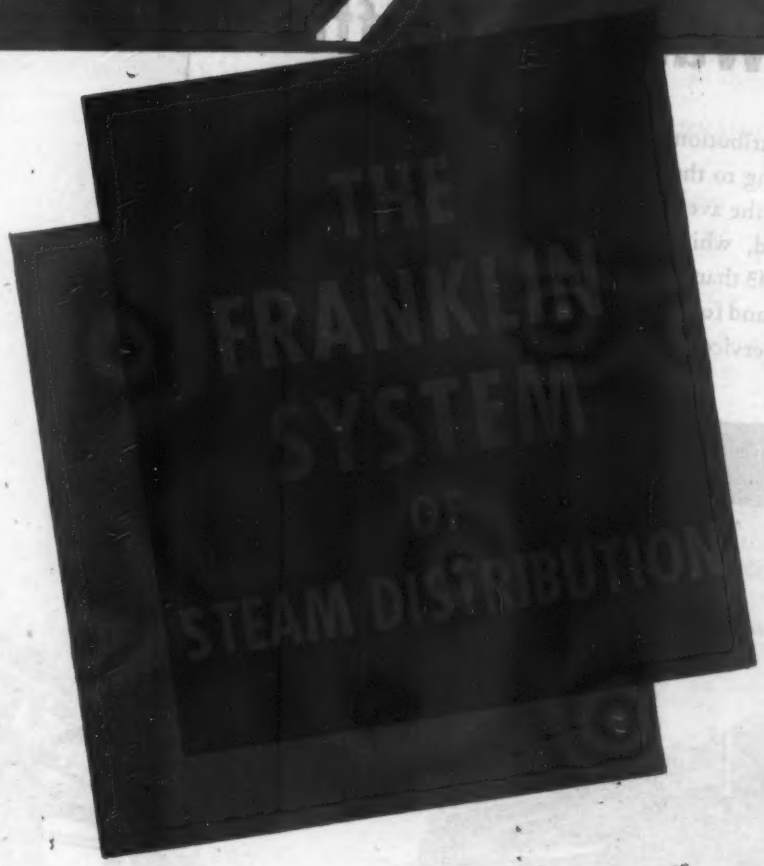

THE STEAM LOCOMOTIVE'S POWER
makes possible
today's Wartime Traffic
The tremendous contribution the railroads are making to the war effort is shown by the average freight train load, which was 47% greater in 1943 than in 1938, although a thousand fewer locomotives were in service.
That the railroads can handle this tremendous wartime traffic is due largely to the remarkable development in the power of the steam locomotive, in which Lima has taken so prominent a part.
LIMA LOCOMOTIVE WORKS
LIMA LOCOMOTIVE WORKS INCORPORATED
INCORPORATED, LIMA, OHIO

For GREATER



Overcomes...

LIMITATIONS IMPOSED ON LOCOMOTIVES OF CONVENTIONAL DESIGN

"When a boiler becomes a part of a locomotive, no more steam can be produced by it than can be got into and out of the cylinders. The maximum output of the locomotive boiler in service, therefore, depends as much upon the entire chain of passages from the boiler to the exhaust as it does upon the proportions of the boiler itself. There are probably few locomotives now in service the boiler capacity of which is not actually limited by restrictions imposed on the flow of steam through the cylinders."

Editorial, Railway Age, June 2, 1945

FRANKLIN RAILWAY SUPPLY

LOCOMOTIVE CAPACITY

Combines...

MAXIMUM POWER WITH SMOOTH OPERATION

MAXIMUM STARTING EFFORT is attained by the application of proper gear ratios for given boiler pressures, wheel diameters and adhesive weight.

GREATEST EFFICIENCY AND ECONOMY in the use of steam is obtained because of the short cut-off, cylinders with large steam and exhaust passages, and a new design of ball joint.

The Type "E" Booster saves time by starting promptly without taking slack, accelerating rapidly to road speed and maintaining speed on grades.

**Trade Mark Reg. U. S. Pat. Off.*

COMPANY, INC.

NEW YORK
CHICAGO
MONTREAL

Equipment Production Is Now About on Schedule

Production of the principal items of domestic transportation equipment for the first half of 1945 kept up, in general, with the scheduled controlled material allotment program, said a July 24 statement from the Office of Defense Transportation. Most of the items showed a considerable advance over any previous six-month period since the beginning of the war, O. D. T. added.

One exception was new replacement steel rails, production of which has been adversely affected by military orders; total production for 1945, however, is now expected to equal the 1,900,000 tons of 1944. Freight car production for the first half of 1945 was 24,176 cars, with 47,164 now scheduled for the entire year. During the second half of the year "most of the scheduled 1,200 troop sleepers and 400 kitchen cars will be produced for military use." Production of passenger-train cars under a new program recently authorized is expected to begin in the last quarter of 1945, with a scheduled output of 97 units, and to continue with approximately 650 more in the first two quarters of 1946.

Motor truck production for the year 1945 is expected to be the largest for any war year, "comparing not unfavorably with the annual pre-war production," as O. D. T. put it.

Production figures for the first half of 1945, as compared with 1944, and 1943, are as follows:

Equipment	1945	1944	1943
Railway Transportation			
Locomotives			
Steam	52	189	197
Diesel	309	325	104
Total	361	514	301
New Replacement Rail	870,542 tons	1,065,392 tons	709,223 tons
Freight Cars			
Box	9,298	5,972	....
All Others	14,878	10,890	....
Total	24,176	16,862	9,846
Passenger-Train Cars			
Troop Sleepers	0	558	0
Kitchen Cars	0	381	0
Regular Coaches & Baggage Cars	0	0	0
Highway Transport			
Motor Trucks	82,731	32,680	1,571
Trailers	13,849	6,755	4,356
Integral Buses	4,375	1,960	710

LOCOMOTIVES

The Louisville & Nashville is expected to enter the market for 16 Diesel-electric switching locomotives, 1,000 coal cars and 1,000 box cars.

The Virginian has ordered five steam locomotives of 2-8-4 wheel arrangement from the Lima Locomotive Works. The inquiry for this equipment was reported in the *Railway Age* of June 23.

FREIGHT CARS

The Western Maryland has ordered 40 31-ft. 4-in. covered cement hopper cars of 70 tons' capacity from the American Car & Foundry Co. Deliveries are expected during the latter months of this year or early 1946. The inquiry for this equipment was reported in the *Railway Age* of July 7.

The War Department has placed orders for 12,790 railroad cars which are to be used in the Philippine Islands with delivery stipulated for the first quarter of 1946. The orders are as follows: American Car & Foundry Co., 4,000 box cars, 190 tank cars and 130 refrigerator cars; Bethlehem Steel, 1,290 low-side and 1,290 high-side gondolas and 500 flat cars; General American Transportation, 1,860 flat cars and 190 tank cars; Greenville Steel Car Co., 1,500 flat cars; and Pullman-Standard Car Manufacturing Co., 1,840 box cars.

PASSENGER CARS

C. & O. Plans New Post-War Passenger Service

The Chesapeake & Ohio has placed an order with the Edward G. Budd Manufacturing Company for two streamlined stainless steel passenger trains with which it will inaugurate a fast de luxe daylight service between Washington, D. C., and Cincinnati, Ohio, after the war. The new service, which will be operated at minimum fares, is intended to bring the Ohio river metropolis and other principal cities in the Ohio and Kanawha river valleys into closer relationship with the nation's capital. Running time between Cincinnati and Washington is expected to be 12 hours or less. The trains will be powered by a new type of coal-burning steam turbine electrically-driven locomotive, three of which are now under construction.

Commenting on the new trains, Carl E. Newton, president of the railroad, said "The recent diplomatic specials which were run from Washington through to the San Francisco Conference in 3½ days, without changing cars, demonstrate the entire practicability of a through transcontinental passenger service in the post-war period. The new equipment which we are ordering will establish new standards of comfort and appeal which will attract the coast-to-coast traveling public to the rails once the inconvenience of changing trains at Chicago and St. Louis is eliminated."

The Missouri Pacific has ordered 53 streamlined passenger-train cars from the American Car & Foundry Co.

The Alton has ordered 15 steel passenger coaches from the American Car & Foundry Co.

SIGNALING

The St. Louis Southwestern has placed orders with the Union Switch & Signal Co., for materials to install block signaling on 133.5 miles of single track between Wetumka, Tex., and Denison, involving H-2 searchlight signals, relays, rectifiers and housings. The field construction will be done by the signal forces of the railroad.

The Canadian National has placed an order with the Union Switch & Signal Co., for materials required for signaling at Eastern Junction, Que. The order includes Style H-2 searchlight signal units, Style ML-10 electric locks for application to an S. & F. mechanical interlocking machine, Style M-2 electric switch movements, together with the DN-22 and DN-11 neutral relays, rectifiers, etc. The materials will be installed by company forces.

The Baltimore & Ohio has ordered materials from the General Railway Signal Co., for the installation of centralized traffic control on three miles of double-track at Charlestown, Ohio. The 34-in. control machine will be located at Newton Falls, Ohio, nine miles from the farthest controlled point. It will be equipped with 14 track occupancy indication lamps and nine levers for the control of six switch machines and 12 signals at two passing sidings and a crossover.

Financial

Atchison, Topeka & Santa Fe-Chicago, Rock Island & Pacific.—*Acquisition.*—These roads have applied to the Interstate Commerce Commission for authority to acquire jointly the Oklahoma City Junction by purchase of its capital stock for $250,000, to lease the properties of that company, and for the Santa Fe to operate the leased line.

Denver & Rio Grande Western.—*Annual Report.*—The 1944 annual statement of this road shows a net income, after interest and other fixed charges of $2,505,572, as compared with a net income of $5,907,760 in 1943. Selected items from the income statement follow:

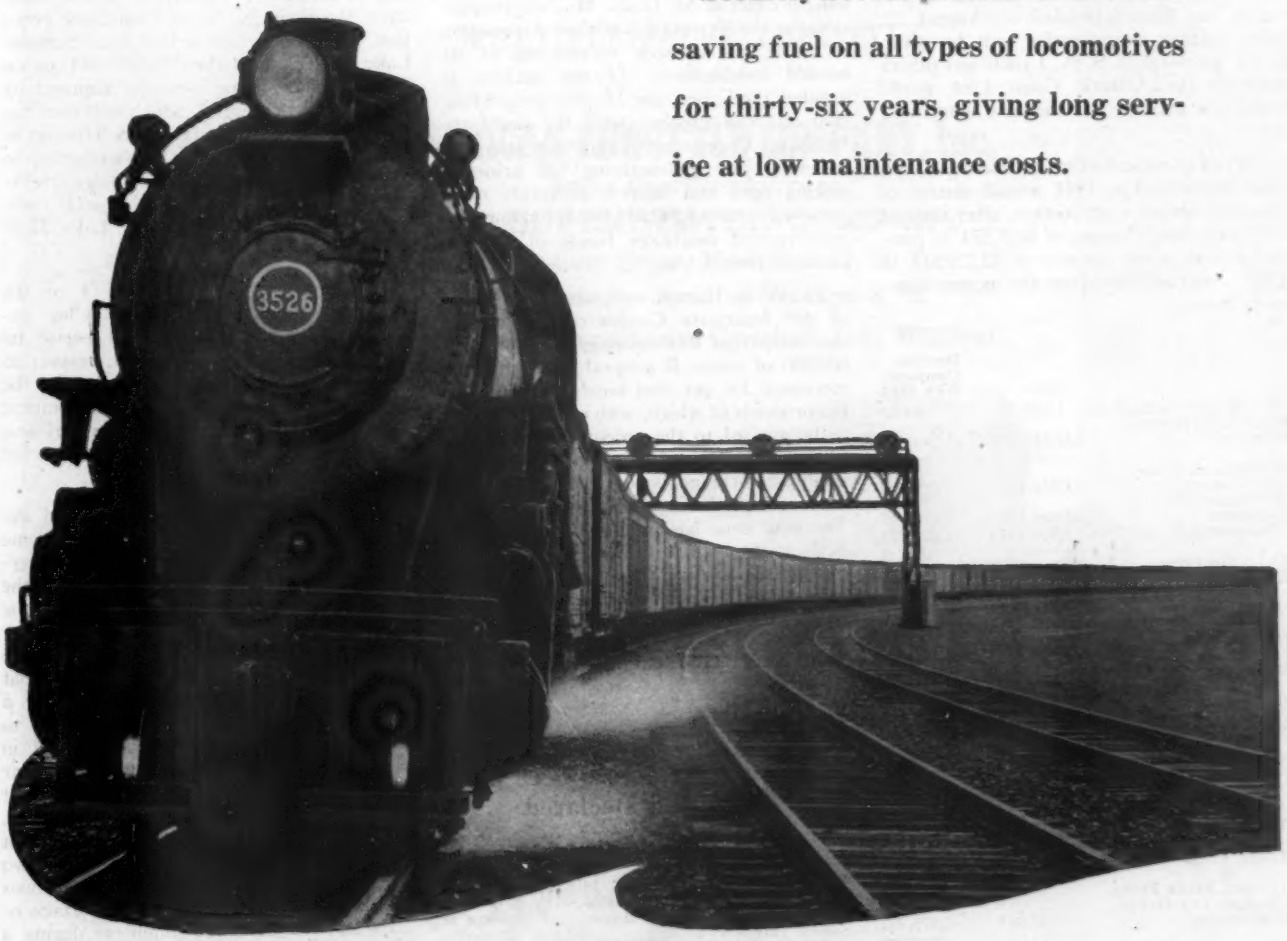
	1944	Increase or Decrease Compared With 1943
Average Mileage Operated	2,391.4	-12.68
Railway Operating Revenues	$70,346,987	+$152,985
Maintenance of way and structures	9,487,436	+1,569,664
Maintenance of equipment	15,669,926	+1,359,191
Transportation	21,027,800	+642,069
Total Operating Expenses	49,777,178	+3,775,678
Operating ratio	70.76	+5.23
Net Revenue From Operations	20,569,809	-3,622,693
Railway tax accruals	8,782,413	-1,646,622
Hire of equipment—Net Dr.	843,447	-545,511
Joint facility rents—Net Dr.	388,993	+65,308
Net Railway Operating Income	10,554,956	-1,495,868
Other income—Net Dr.	*2,397,076	+1,919,920

News Department continued on next left-hand page

Motive Power *must be* kept efficient

• Today's tremendous traffic movements require motive power of highest efficiency at all times. To develop that efficiency each ton of fuel must yield every possible pound of steam. That's why it is vitally important always to maintain a complete arch in the locomotive firebox.

Security Sectional Arches have been saving fuel on all types of locomotives for thirty-six years, giving long service at low maintenance costs.



HARBISON-WALKER REFRACTORIES CO.
Refractories Specialists

AMERICAN ARCH CO. INC.
60 East 42nd Street, New York 17, N. Y.
Locomotive Combustion Specialists

Available for Interest	8,157,880	−3,415,788
Interest on funded debt	†5,652,308	−13,600
NET INCOME	2,505,572	−3,402,188

* Includes $1,534,140 D. & S. L. W. R. R. rental applicable to the period prior to January 1, 1944.
† Includes interest on underlying bonds matured unpaid: 1944, $2,259,790; 1943, $2,259,790.

ERIE.—*Promissory Notes.*—Division 4 of the Interstate Commerce Commission has authorized this company to issue $1,320,000 of promissory notes in evidence, but not in payment, of the unpaid portion of the cost of 500 50-ton box cars purchased under a conditional sale agreement at a unit price of $3,360. (Previous item in *Railway Age* of July 7, page 48.)

FLORIDA EAST COAST.—*Reorganization.*—The Interstate Commerce Commission has reopened its proceedings dealing with its modified plan for this road's reorganization under section 77 of the Bankruptcy Act (the provisions of which were summarized in *Railway Age* of January 20, page 186) to receive evidence from any party relating to further modification or to receive other proposed plans. A hearing before Oliver E. Sweet, director of the Bureau of Finance, has been scheduled on August 21. Thus further consideration will be given to the proposal of S. A. Lynch and others whereby the Atlantic Coast Line would acquire a majority of the new company's stock.

INTERNATIONAL-GREAT NORTHERN.—*Annual Report.*—The 1944 annual statem of this road shows a net income, after interest and other fixed charges, of $825,574, as compared with a net income of $2,220,615 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
Average Mileage Operated	1,109.81	−44.70
RAILWAY OPERATING REVENUES	$30,882,212	+1,286,313
Maintenance of way and structures	5,913,428	+1,171,771
Maintenance of equipment	4,089,521	+430,385
Transportation—rail line	9,829,957	+1,022,375
TOTAL OPERATING EXPENSES	21,466,758	+2,752,080
Operating ratio	69.51	+6.28
NET REVENUE FROM OPERATIONS	9,415,456	−1,465,767
Railway tax accruals	3,969,799	−259,413
RAILWAY OPERATING INCOME	5,445,657	−1,206,354
Net rents—Dr.	1,993,208	+262,007
NET RAILWAY OPERATING INCOME	3,452,448	−1,468,361
Other income	327,603	+91,648
TOTAL INCOME	3,780,052	−1,376,713
TOTAL FIXED CHARGES	2,774,607	−9,935
INCOME AFTER FIXED CHARGES AND OTHER DEDUCTIONS	962,065	−1,379,232
Income applied to sinking and other reserve funds	136,491	+15,809
NET INCOME TRANSFERRED TO EARNED SURPLUS ACCOUNT	825,574	−1,395,041

KANSAS CITY SOUTHERN.—*Refunding Plan.*—It has been reported that a plan acceptable to the board of directors has been developed for refunding the remaining 1950 mortgage debt maturities of the Kansas City Southern. Approval of the plan will be sought from stockholders in a proxy statement to be mailed about August 24.

NEW YORK CENTRAL.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire for $75,000 the line from Saranac Lake, N. Y., to Lake Placid, 10.1 miles, owned by the Chateaugay & Lake Placid, a subsidiary of the Delaware & Hudson, which has operated it under lease.

PENNSYLVANIA.—*Court Absolves Officers.*—On July 21, fifteen officers and directors of the Pennsylvania and its subsidiary, the Pennsylvania, Ohio & Detroit, were absolved of charges of negligence, lack of good faith and non-fulfillment of their duty to stockholders in making a private sale of $28,483,000 of bonds of the latter carrier to Kuhn, Loeb & Co. in New York in June, 1943.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—*Seeks Refinancing Authority.*—Frank A. Thompson, trustee of the St. Louis-San Francisco, has filed a petition in federal court at St. Louis, Mo., for permission for the Terminal Railroad Association of St. Louis to seek refinancing of its bonded indebtedness. If the petition is granted, the Frisco, and 14 other proprietary railroads can proceed with the necessary Interstate Commerce Commission steps for assuming and guaranteeing the principal sinking fund and interest payments on a proposed issue of $40,312,000 refunding and improvement mortgage bonds of the St. Louis Terminal Co.

TEXAS & PACIFIC.—*Bonds.*—Division 4 of the Interstate Commerce Commission has authorized this company to issue $39,000,000 of series E general and refunding mortgage 3⅞ per cent bonds, due in 1985. the proceeds of which, with other funds, are to be applied to the redemption at 105 of $40,956,000 of outstanding general and refunding mortgage bonds, series B, C and D, on which the interest rate is 5 per cent. The new issue has been sold at 98.6399 to Halsey, Stuart & Company and others, making the average annual cost to the company about 3.94 per cent. Net savings from the transaction are estimated at $14,801,702.

Average Prices Stocks and Bonds

	July 24	Last week	Last year
Average price of 20 representative railway stocks..	54.79	55.38	41.80
Average price of 20 representative railway bonds..	97.97	98.00	89.21

Dividends Declared

Atlantic Coast Line.—$1.00, payable September 13 to holders of record August 17.

Chattahoochee & Gulf.—(Irreg.), $1.25, payable July 16 to holders of record July 10.

Dallas Railway & Terminal.—7% preferred, $1.75, quarterly, payable August 1 to holders of record July 23.

Erie & Kalamazoo.—$1.50, semi-annually, payable August 1 to holders of record July 26.

Fonda, Johnstown & Gloversville.—vtc, 50¢, payable July 25 to holders of record July 13.

Louisville, Henderson & St. Louis.—Common $4.00; 5% preferred $2.50, both semi-annually, payable August 15 to holders of record August 1.

Louisville & Nashville.—88¢, quarterly, payable September 13 to holders of record August 1.

Mine Hill & Schuylkill Haven.—$1.00, semi-annually, payable August 1 to holders of record July 14.

Wheeling & Lake Erie.—5½% preferred $1.37½; 4% prior lien, both quarterly, payable August 1, to holders of record July 27.

Abandonments

CENTRAL OF NEW JERSEY.—This road has applied to the Interstate Commerce Commission for authority to abandon two segments of a branch, one from Highland Beach, N. J., to East Long Branch, 5.5 miles, and the other a 0.88-mile portion at East Long Branch.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A group of railway unions has asked the Interstate Commerce Commission either to prescribe conditions for the protection of employees who may be adversely affected by a line abandonment by this road, authorized in the Finance Docket No. 14001 proceedings, similar to those in the Burlington case, or to extend its reservation of jurisdiction in that respect for an additional 2-year period.

DELAWARE & HUDSON.—This corporation and the Chateaugay & Lake Placid, which it controls by ownership of stock, have applied to the Interstate Commerce Commission for authority to abandon operation of, and to abandon, respectively, a line from Lyon Mountain, N. Y., to Plumadore Junction, 13.66 miles, and a line from Saranac Lake, N. Y., to Lake Placid, 10.1 miles. The last-named line is to be acquired by the New York Central, which will continue its operation. The Delaware & Hudson at the same time applied for authority to abandon operation under trackage rights over a line of the New York Central from Plumadore Junction to Saranac Lake, 27.36 miles.

ILLINOIS CENTRAL.—Division 4 of the Interstate Commerce Commission has extended for an additional 2-year period its reservation of jurisdiction with respect to the protection of employees who may be adversely affected by the line abandonment of the Chicago, St. Louis & New Orleans, authorized in 1943 in the Finance Docket No. 13992 proceedings.

MISSOURI PACIFIC.—In a proposed report on further hearing Examiner Jerome K. Lyle has recommended that the Interstate Commerce Commission deny the application of this road's subsidiary, the Missouri Pacific in Nebraska, for authority to abandon its branch line from Talmage Junction, Neb., to Crete, 70 miles, and that the authorization for abandonment of a portion of the branch, from Talmage to Crete, 58.1 miles, which was granted in September, 1943, to be effective one year thereafter, but later was vacated so that the record might be brought up to date, should not be reinstated. The line has not been operated at a loss in the past two years, the examiner held, and revenues would have been greater if a shortage of cars had not curtailed shipments during a part of that period. "Abandonment should not be permitted under any circumstances unless and until the applicant is in a position to show that it has adopted all appropriate means of reducing expenses," said the report, and the establishment of triweekly instead of daily freight service in each direction, together with a reduction in the number of full-time agents, were suggested as means to this end. Conceding

News Department continued on third left-hand page

100%

of the locomotives ordered by American railroads during the first quarter of 1945...

Specified the AMERICAN MULTIPLE-VALVE THROTTLE

AMERICAN THROTTLE COMPANY, Inc.

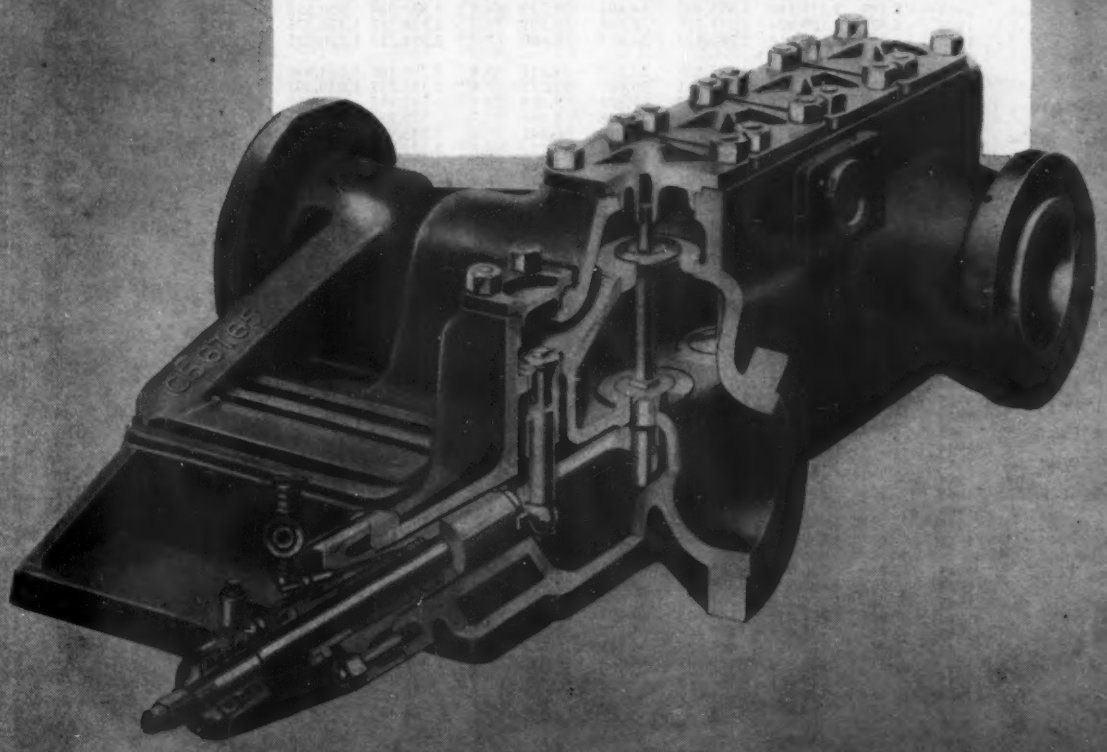
Sales Representatives:

THE SUPERHEATER COMPANY

60 East 42nd Street, New York 17, N. Y.

122 S. Michigan Avenue, Chicago 3, Ill.

Canada: The Superheater Company, Ltd., Montreal



Freight Operating Statistics of Large Steam Railways—Selected

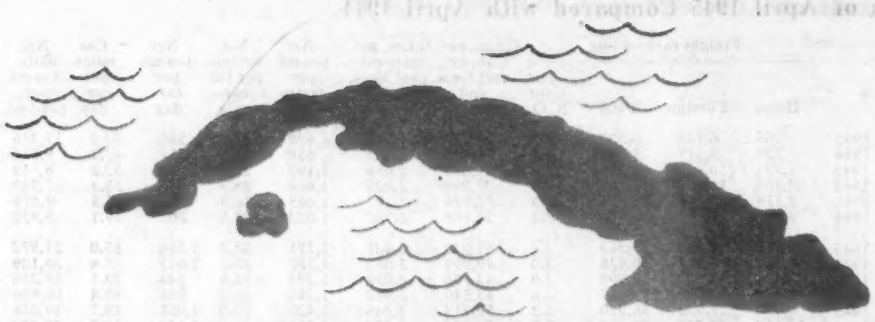
Region, road, and year		Miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross excl. locos. & tenders	Ton-miles (thousands): Net-rev. and non-rev.	Road locos. on line: Serviceable: Unstored	Road locos. on line: Serviceable: Stored	Road locos. on line: B. O.	Road locos. on line: Per cent B. O.
New England Region:													
Boston & Albany	1945	362	179,391	206,489	34,093	4,432	60.9	298,395	122,891	71	..	20	22.0
	1944	362	159,385	182,794	28,283	3,818	63.8	247,605	103,281	75	..	19	20.2
Boston & Maine	1945	1,777	365,303	391,517	24,597	15,044	68.4	968,466	434,893	143	4	18	10.9
	1944	1,807	395,854	453,790	46,236	14,527	65.4	957,247	420,092	148	..	28	15.9
N. Y., New H., & Hartf.†	1945	1,815	487,087	658,587	53,265	19,161	69.6	1,161,813	515,844	220	16	49	17.3
	1944	1,815	539,662	676,286	58,293	19,740	65.2	1,253,819	542,995	242	1	25	14.7
Great Lakes Region:													
Delaware & Hudson	1945	846	316,810	419,407	46,772	14,998	66.1	1,070,629	557,662	134	43	33	15.7
	1944	846	324,414	402,003	41,909	13,739	64.3	995,535	512,395	142	39	36	16.6
Del., Lack. & Western	1945	971	384,792	459,381	76,191	16,927	68.4	1,126,130	531,225	158	10	35	17.2
	1944	971	371,021	433,235	69,252	15,775	68.2	1,044,351	492,892	143	27	32	15.8
Erie	1945	2,243	903,371	972,826	81,146	44,178	64.4	2,931,180	1,281,061	315	18	56	14.4
	1944	2,244	1,036,742	1,115,794	75,461	47,173	64.9	3,133,604	1,368,718	321	1	75	18.9
Grand Trunk Western	1945	1,026	282,689	289,668	2,341	9,523	66.6	616,791	273,700	64	1	14	17.7
	1944	1,026	266,865	273,227	2,738	8,794	62.1	592,936	249,052	65	..	15	18.8
Lehigh Valley	1945	1,247	454,183	494,927	58,322	20,120	61.9	1,449,801	697,978	152	..	17	10.1
	1944	1,247	593,353	659,272	89,318	24,138	58.4	1,775,467	823,442	151	..	16	9.6
New York Central	1945	10,331	3,613,437	3,911,139	251,465	138,941	63.8	9,622,219	4,491,846	1,125	10	276	19.6
	1944	10,325	3,825,649	4,102,366	257,340	143,318	60.5	10,259,683	4,672,367	1,118	10	275	19.6
New York, Chi. & St. L.	1945	1,656	745,422	758,797	12,389	30,903	68.7	1,997,665	922,279	168	11	17	8.7
	1944	1,657	866,242	875,755	9,854	33,153	63.9	2,223,922	977,533	165	..	20	10.8
Pere Marquette	1945	1,915	464,219	485,656	11,206	16,435	64.7	1,122,078	522,379	140	..	25	15.2
	1944	1,945	425,500	438,924	11,455	14,290	64.2	970,361	445,572	145	..	23	13.7
Pitts. & Lake Erie	1945	229	92,087	93,887	234	4,122	66.1	330,017	188,626	28	..	19	40.4
	1944	229	98,007	102,831	200	4,264	62.8	368,268	214,363	31	..	10	24.4
Wabash	1945	2,381	748,863	774,048	18,077	28,128	70.3	1,841,195	859,612	177	..	35	16.5
	1944	2,381	709,655	727,243	17,193	26,222	71.4	1,675,386	775,331	173	9	40	18.0
Central Eastern Region:													
Baltimore & Ohio	1945	6,095	2,457,645	3,000,708	295,491	86,183	64.0	6,259,654	3,120,920	954	..	225	19.1
	1944	6,121	2,486,460	3,058,628	316,772	83,609	62.5	6,096,078	2,983,743	902	..	241	21.1
Central of New Jersey†	1945	654	230,166	270,979	61,595	9,299	62.2	677,121	338,774	126	6	23	14.8
	1944	655	243,424	285,064	66,501	8,601	58.1	647,373	318,846	122	3	19	13.2
Chicago & Eastern Ill.	1945	912	250,881	253,820	5,829	7,308	64.5	503,120	237,269	68	..	8	10.5
	1944	912	321,192	332,825	10,441	9,769	57.8	706,357	311,920	81	..	6	6.9
Elgin, Joliet & Eastern	1945	392	132,285	136,575	3,990	3,910	68.2	293,880	159,546	64	..	12	15.8
	1944	392	137,682	141,862	3,761	3,721	64.3	294,110	157,567	65	..	11	14.5
Long Island	1945	372	39,069	40,955	18,063	488	59.3	33,333	15,112	46	..	6	11.5
	1944	372	34,763	36,364	16,022	380	56.3	28,438	12,294	43	..	10	18.9
Pennsylvania System	1945	10,024	4,629,470	6,375,053	707,349	183,719	63.8	13,010,030	6,318,046	2,041	..	185	8.3
	1944	9,881	4,758,577	5,533,500	689,517	178,295	61.1	13,041,166	6,207,967	1,988	2	209	9.5
Reading	1945	1,365	592,642	667,766	81,873	20,947	65.7	1,536,700	821,850	271	15	52	15.4
	1944	1,411	576,726	657,404	85,353	19,001	62.2	1,464,904	776,693	278	1	49	14.9
Pocahontas Region:													
Chesapeake & Ohio	1945	3,035	1,108,625	1,193,760	53,935	51,827	57.5	4,377,573	2,466,705	457	9	76	14.0
	1944	3,032	1,112,262	1,201,422	57,089	52,198	56.8	4,521,427	2,585,208	423	..	81	16.1
Norfolk & Western	1945	2,139	766,694	820,663	55,231	35,889	60.7	3,001,188	1,616,618	279	25	17	5.3
	1944	2,132	773,527	827,660	59,580	34,895	58.2	3,108,376	1,693,427	302	14	20	6.0
Southern Region:													
Atlantic Coast Line	1945	4,926	1,159,151	1,168,142	16,760	32,725	60.9	2,208,733	943,295	390	2	31	7.3
	1944	4,953	1,087,850	1,115,744	16,973	30,585	62.3	2,050,655	881,666	372	7	26	6.4
Central of Georgia†	1945	1,783	364,906	375,480	6,474	8,955	67.8	596,612	276,194	92	..	13	12.4
	1944	1,783	354,098	363,932	6,095	8,343	68.4	555,147	255,807	96	..	8	7.7
Gulf, Mobile & Ohio	1945	1,932	292,157	369,311	2,513	11,099	78.7	676,379	331,189	103	3	9	7.8
	1944	1,962	326,516	405,343	3,385	11,457	71.1	753,941	363,827	110	..	12	9.8
Illinois Central (incl.	1945	6,346	1,734,229	1,756,143	32,895	68,434	63.7	4,744,533	2,221,613	646	3	54	7.7
Yazoo & Miss. Vy.)	1944	6,347	1,747,511	1,762,803	34,225	65,973	62.0	4,662,922	2,158,016	662	..	42	6.0
Louisville & Nashville	1945	4,746	1,560,368	1,699,716	44,147	40,981	65.0	2,878,946	1,445,820	410	2	71	14.7
	1944	4,736	1,614,451	1,758,463	44,476	41,249	63.1	3,012,715	1,531,090	424	10	52	10.7
Seaboard Air Line*	1945	4,157	1,000,652	1,066,130	17,676	28,579	65.9	1,892,797	804,128	281	..	52	15.6
	1944	4,161	1,015,106	1,075,497	14,694	27,722	64.8	1,883,360	800,553	313	..	39	11.1
Southern	1945	6,471	2,109,924	2,141,775	38,598	50,501	71.2	3,138,137	1,451,375	607	..	100	14.1
	1944	6,479	2,220,016	2,283,137	34,863	50,600	67.0	3,314,213	1,520,025	610	..	72	10.6
Northwestern Region:													
Chi. & North Western	1945	8,069	1,050,172	1,095,839	22,210	34,111	69.8	2,299,505	1,074,496	351	7	113	24.0
	1944	8,098	1,010,141	1,053,561	20,695	32,323	67.8	2,186,747	1,050,497	373	26	106	21.0
Chicago Great Western	1945	1,445	279,979	289,737	7,671	9,289	73.1	592,415	271,389	74	..	9	10.8
	1944	1,445	276,891	281,645	12,388	8,866	72.7	574,089	266,164	69	..	10	12.7
Chi., Milw., St. P. & Pac.†	1945	10,714	1,420,823	1,508,768	66,219	50,847	69.8	3,340,926	1,591,164	468	66	66	11.0
	1944	10,715	1,485,085	1,583,086	71,216	49,752	68.7	3,332,093	1,598,743	511	38	73	11.7
Chi., St. P., Minneap. & Om.	1945	1,606	196,550	211,737	13,656	5,269	70.0	357,897	168,110	86	19	21	16.7
	1944	1,606	211,926	230,621	12,052	5,322	68.9	362,715	169,835	100	22	9	6.9
Duluth, Missabe & I. R.	1945	546	128,705	129,394	2,111	6,762	51.6	625,126	383,784	52	..	4	7.1
	1944	545	106,549	107,040	752	5,186	51.4	475,689	288,965	54	..	2	3.6
Great Northern	1945	8,276	1,123,552	1,124,427	59,507	46,870	71.5	3,194,678	1,604,769	392	22	62	13.0
	1944	8,276	1,258,637	1,260,899	52,035	47,574	66.1	3,481,948	1,744,056	421	7	50	10.5
Min., St. P. & S. St. M.	1945	4,259	423,820	442,337	7,598	11,128	65.0	768,069	362,847	127	4	11	7.7
	1944	4,259	496,492	509,376	8,264	13,361	60.4	992,199	471,735	133	..	8	5.7
Northern Pacific	1945	6,570	876,794	935,396	66,841	38,680	77.4	2,481,624	1,270,197	349	35	56	12.7
	1944	6,571	950,904	1,025,789	80,356	39,581	72.2	2,702,030	1,391,095	373	9	53	12.2
Central Western Region:													
Alton†	1945	915	275,995	298,845	465	7,904	70.3	516,164	275,557	71	..	7	9.0
	1944	915	245,321	261,545	619	6,397	66.8	429,430	212,517	73	..	4	5.2
Atch., Top. & S. Fe (incl.	1945	13,115	3,594,453	3,805,881	188,021	128,994	64.4	8,626,472	3,526,511	894	4	104	10.4
G. C. & S. F. & P. & S.F.)	1944	13,123	3,099,895	3,327,530	206,806	106,358	64.6	7,146,509	2,857,161	868	8	88	9.1
Chi., Burl. & Quincy	1945	8,789	1,340,589	1,401,773	44,020	53,634	69.9	3,622,827	1,765,954	435	..	82	15.9
	1944	8,794	1,408,003	1,476,459	48,814	51,579	67.8	3,549,706	1,716,091	488	..	66	11.9
Chi., Rock I. & Pac.†	1945	7,716	1,443,232	1,504,062	15,691	46,695	70.2	2,986,325	1,364,034	387	..	73	15.9
	1944	7,718	1,340,559	1,403,502	16,513	40,483	68.4	2,615,548	1,167,110	399	..	69	14.7
Denver & R. G. Wn.†	1945	2,386	455,422	517,211	87,570	16,346	80.1	1,010,884	512,871	165	14	38	17.5
	1944	2,391	411,628	469,884	74,196	14,063	75.4	905,479	451,141	156	11	47	22.0
Southern Pacific—Pac. Lines	1945	8,179	2,294,920	2,617,160	401,606	98,392	69.2	6,396,571	2,717,813	751	..	171	18.5
	1944	8,193	2,233,720	2,542,813	365,214	94,187	68.7	6,072,504	2,579,299	791	1	143	15.3
Union Pacific	1945	9,781	3,031,293	3,227,143	279,358	114,770	72.0	7,362,781	3,286,682	787	34	79	8.8
	1944	9,782	2,807,463	3,002,759	259,173	106,534	73.1	6,827,308	3,180,603	786	28	66	7.5
Southwestern Region:													
Mo.-Kans.-Texas Lines	1945	3,241	736,091	761,974	12,929	20,620	65.5	1,383,579	642,084	150	..	15	9.1
	1944	3,241	828,627	865,054	15,630	21,610	62.8	1,453,433	655,667	157	..	13	7.6
Missouri Pacific†	1945	7,056	1,616,316	1,701,955	41,016	61,528	67.1	4,101,075	1,880,578	455	1	67	12.8
	1944	7,071	1,757,434	1,840,602	40,624	61,976	64.2	4,271,022	1,934,206	477	1	64	11.8
Texas & Pacific	1945	1,882	427,469	427,469	5,833	14,370	69.5	917,690	390,248	126	10	17	11.1
	1944	1,882	478,059	478,059	6,345	16,765	65.4	1,095,460	448,369	121	14	12	8.2
St. Louis-San Francisco†	1945	4,615	1,121,802	1,177,487	13,442	29,067	69.1	1,897,724	883,147	316	..	33	9.5
	1944	4,616	1,099,061	1,182,770	31,355	27,755	66.2	1,847,075	854,198	321	..	28	8.0
St. Louis-San Fran. & Texas	1945	161	40,492	41,619	7	825	73.1	50,637	22,001	7	..	2	22.2
	1944	159	34,093	34,474	12	558	68.3	34,746	14,465	9	..		
St. Louis Southw. Lines†	1945	1,600	490,187	493,918	6,439	19,065	71.5	1,188,439	531,249	116	8	18	12.7
	1944	1,600	532,298	544,985	7,583	18,195	69.8	1,128,648	488,280	117	2	23	16.2
Texas & New Orleans	1945	4,325	1,230,647	1,238,781	48,312	32,891	66.6	2,164,846	948,642	260	..	21	7.5
	1944	4,339	1,109,216	1,113,732	39,078	30,666	67.7	1,996,100	880,410	259	..	19	6.8

* Report of receivers.
† Report of trustee or trustees.

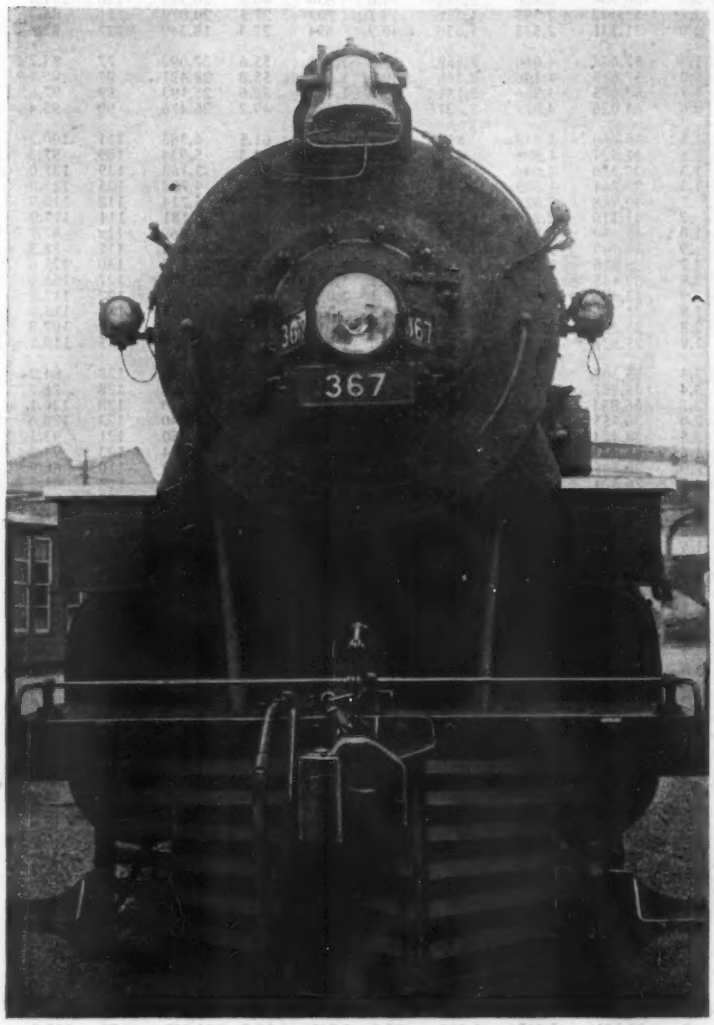
Items for the Month of April 1945 Compared with April 1944

Region, road, and year		Freight cars on line: Home	Foreign	Total	Per Cent B. O.	G.t.m. per train-hr. excl.locos. and tenders	G.t.m. per train-mi. excl.locos. and tenders	Net ton-mi. per train-mile	Net ton-mi. per l'd. car-mile	Net ton-mi. per car-day	Car miles per car-day	Net daily ton-mi. per road-mi.	Coal lb. per 1000 g.t.m. inc. loco.	Mi. per loco. per day
New England Region:														
Boston & Albany	1945	265	6,133	6,398	0.2	24,780	1,675	690	27.7	560	33.2	11,316	174	96.5
	1944	328	5,219	5,547	0.5	24,095	1,559	650	27.1	557	32.2	9,510	191	83.2
Boston & Maine	1945	1,921	10,633	12,554	2.3	41,662	2,658	1,193	28.9	1,045	52.8	8,158	102	87.9
	1944	2,169	10,697	12,866	2.5	37,998	2,425	1,064	28.9	1,047	55.4	7,749	99	98.6
N. Y. New H., & Hartf.†	1945	2,178	20,816	22,994	4.0	32,526	2,399	1,065	26.9	666	35.5	9,474	93	90.0
	1944	3,177	21,397	24,574	2.3	34,488	2,362	1,023	27.5	702	39.1	9,972	102	96.1
Great Lakes Region:														
Delaware & Hudson	1945	2,715	7,798	10,513	3.4	51,932	3,401	1,771	37.2	1,596	65.0	21,972	109	75.3
	1944	4,337	6,101	10,438	3.0	49,999	3,083	1,587	37.3	1,615	67.4	20,189	109	71.9
Del., Lack. & Western	1945	5,428	14,571	19,999	3.9	43,776	2,958	1,395	31.4	848	39.5	18,236	124	95.9
	1944	6,429	12,708	19,137	2.6	43,540	2,842	1,341	31.2	869	40.8	16,920	121	91.4
Erie	1945	8,990	27,920	36,910	3.2	52,313	3,266	1,427	29.0	1,097	58.7	19,038	99	95.9
	1944	12,112	27,248	39,360	2.8	50,354	3,034	1,325	29.0	1,142	60.7	20,332	94	107.2
Grand Trunk Western	1945	1,845	9,312	11,157	4.1	43,868	2,200	976	28.7	795	41.5	8,892	87	130.3
	1944	2,783	5,637	8,420	4.8	44,058	2,235	939	28.3	953	54.2	8,091	89	126.2
Lehigh Valley	1945	5,853	22,757	28,610	2.1	51,972	3,282	1,580	34.7	769	35.8	18,658	101	115.1
	1944	7,826	22,484	30,310	1.7	49,747	3,090	1,433	34.1	914	45.9	22,011	113	155.7
New York Central	1945	41,203	107,128	148,331	3.4	41,900	2,696	1,259	32.3	953	46.3	14,493	105	109.5
	1944	49,184	99,486	148,670	2.9	43,329	2,713	1,236	32.6	1,036	52.6	15,084	104	112.9
New York, Chi. & St. L.	1945	1,765	15,824	17,589	1.9	48,789	2,692	1,243	29.8	1,743	85.0	18,564	90	136.8
	1944	3,341	13,975	17,316	2.5	47,708	2,577	1,133	29.5	1,848	98.1	19,665	88	166.1
Pere Marquette	1945	2,699	10,389	13,088	2.0	41,542	2,449	1,140	31.8	1,279	62.2	9,093	90	106.1
	1944	2,890	8,829	11,719	2.2	40,086	2,311	1,061	31.2	1,269	63.4	7,636	92	96.4
Pitts. & Lake Erie	1945	3,326	11,035	14,361	5.2	48,560	3,592	2,053	45.8	448	14.8	27,456	93	74.8
	1944	4,529	8,334	12,863	3.6	51,993	3,763	2,190	50.3	556	17.6	31,203	89	84.8
Wabash	1945	5,090	14,393	19,483	3.2	45,286	2,482	1,159	30.6	1,389	64.7	12,034	109	129.6
	1944	7,068	13,966	21,034	2.0	45,694	2,377	1,100	29.6	1,272	60.3	10,854	108	116.7
Central Eastern Region:														
Baltimore & Ohio	1945	35,448	58,219	93,667	4.2	31,219	2,608	1,300	36.2	1,088	47.0	17,068	145	96.5
	1944	41,257	55,617	96,874	2.7	31,868	2,505	1,226	35.7	1,053	47.2	16,249	146	102.9
Central of New Jersey†	1945	3,754	18,555	22,309	3.9	31,709	3,082	1,542	36.4	522	23.1	17,267	117	91.6
	1944	5,600	15,730	21,330	2.2	30,683	2,677	1,318	37.1	454	21.1	16,226	144	102.1
Chicago & Eastern Ill.	1945	1,696	4,838	6,534	3.7	36,896	2,059	971	32.5	1,244	59.4	8,672	118	114.1
	1944	2,394	6,052	8,446	2.7	37,102	2,248	993	31.9	1,290	69.9	11,401	118	134.7
Elgin, Joliet & Eastern	1945	7,459	6,506	13,965	3.0	18,417	2,355	1,278	40.8	367	13.2	13,567	144	89.4
	1944	8,866	5,832	14,698	3.0	17,184	2,279	1,221	42.3	347	12.7	13,399	135	94.0
Long Island	1945	31	6,932	6,963	.4	6,677	882	400	31.0	70	3.8	1,354	284	55.4
	1944	31	4,718	4,749	.7	6,443	836	362	32.4	80	4.4	1,102	304	46.5
Pennsylvania System	1945	117,570	131,727	249,297	4.0	37,585	2,904	1,410	34.4	837	38.1	21,010	120	98.3
	1944	123,483	128,327	251,810	3.2	38,364	2,826	1,345	34.8	856	40.2	20,942	126	101.4
Reading	1945	9,917	28,355	38,272	2.2	32,402	2,595	1,388	39.2	709	27.5	20,070	111	85.3
	1944	13,574	21,566	35,140	2.0	31,231	2,545	1,350	40.9	694	27.3	18,349	127	85.6
Pocahontas Region:														
Chesapeake & Ohio	1945	35,496	19,940	55,436	1.9	57,638	4,010	2,259	47.6	1,522	55.6	27,092	77	83.2
	1944	41,173	16,380	57,553	1.2	57,619	4,106	2,348	49.5	1,568	55.8	28,421	77	90.1
Norfolk & Western	1945	29,467	7,496	36,963	1.7	63,075	3,956	2,131	45.0	1,437	52.6	25,193	89	97.6
	1944	33,399	7,579	40,978	2.6	64,020	4,077	2,221	48.5	1,388	49.2	26,476	90	95.4
Southern Region:														
Atlantic Coast Line	1945	8,097	20,248	28,345	1.5	30,860	1,915	818	28.8	1,078	61.5	6,383	111	100.5
	1944	8,844	21,130	29,974	2.5	31,524	1,898	816	28.8	956	53.3	5,934	109	97.3
Central of Georgia†	1945	1,763	7,707	9,470	1.3	30,520	1,646	762	30.8	938	44.8	5,163	139	127.0
	1944	2,274	6,367	8,641	1.3	29,744	1,579	728	30.7	970	46.2	4,762	125	123.8
Gulf, Mobile & Ohio	1945	1,586	6,385	7,971	.7	40,988	2,321	1,137	29.8	1,378	58.7	5,714	112	110.9
	1944	2,086	7,704	9,790	.7	41,116	2,319	1,119	31.8	1,273	56.3	6,181	114	117.9
Illinois Central (incl. Yazoo & Miss. Vy.)	1945	17,448	41,475	58,923	1.0	45,380	2,815	1,318	32.5	1,364	66.0	11,669	112	87.7
	1944	19,158	36,004	55,162	.9	44,749	2,737	1,267	32.7	1,355	66.8	11,334	117	88.5
Louisville & Nashville	1945	27,482	18,852	46,334	4.7	29,818	1,845	927	35.3	1,067	46.5	10,155	130	125.6
	1944	31,994	17,033	49,027	2.8	29,435	1,866	948	37.1	1,058	45.2	10,776	127	131.6
Seaboard Air Line*	1945	5,717	18,744	24,461	1.9	33,326	1,942	825	28.1	1,058	57.0	6,448	122	117.8
	1944	6,789	18,249	25,038	1.8	31,396	1,893	805	28.9	996	53.2	6,413	132	113.6
Southern	1945	13,772	33,329	47,101	2.8	25,551	1,504	696	28.7	1,013	49.5	7,476	145	107.8
	1944	16,546	33,988	50,534	1.9	25,628	1,510	693	30.0	1,019	50.6	7,820	145	119.1
Northwestern Region:														
Chi. & North Western	1945	18,516	30,038	48,554	3.4	35,307	2,273	1,062	31.5	735	33.4	4,439	128	84.2
	1944	22,497	25,931	48,428	3.4	35,287	2,239	1,075	32.5	735	33.3	4,324	128	76.2
Chicago Great Western	1945	864	4,858	5,722	2.3	36,833	2,133	977	29.2	1,628	76.3	6,260	128	126.1
	1944	1,236	3,830	5,066	2.0	36,455	2,077	963	30.0	1,695	77.6	6,140	123	128.6
Chi., Milw., St. P. & Pac.†	1945	18,743	30,568	49,311	2.5	38,424	2,370	1,129	31.3	1,096	50.2	4,950	121	93.3
	1944	26,690	28,489	55,179	1.6	36,347	2,260	1,084	32.1	974	44.1	4,974	123	94.2
Chi., St. P., Minneap. & Om.	1945	725	5,849	6,574	7.0	26,525	1,854	871	31.9	815	36.5	3,489	110	60.9
	1944	973	6,268	7,241	4.5	26,324	1,739	814	31.9	731	33.3	3,525	118	65.7
Duluth, Missabe & I. R.	1945	15,123	230	15,353	3.5	86,094	5,062	3,108	56.8	833	28.4	23,430	64	82.2
	1944	15,128	422	15,550	2.7	78,822	4,629	2,812	55.7	622	21.7	17,674	63	67.8
Great Northern	1945	18,377	18,861	37,238	2.5	45,882	2,857	1,435	34.2	1,508	61.6	6,464	97	87.3
	1944	23,745	26,477	50,222	1.6	42,536	2,788	1,396	36.7	1,184	48.9	7,025	97	97.1
Min., St. P. & St. M.	1945	5,401	6,151	11,552	5.5	32,895	1,835	867	32.6	1,058	49.9	2,840	98	107.4
	1944	7,116	6,861	13,977	3.2	35,558	2,030	965	35.3	1,066	50.0	3,692	92	122.4
Northern Pacific	1945	14,509	17,381	31,890	3.5	45,550	2,851	1,459	32.8	1,371	53.9	6,444	130	80.7
	1944	18,172	17,237	35,409	3.1	44,245	2,854	1,469	35.1	1,252	49.4	7,057	131	89.9
Central Western Region:														
Alton†	1945	1,283	7,087	8,370	3.5	40,172	1,888	1,008	34.9	1,049	42.8	10,039	118	137.0
	1944	1,202	6,376	7,578	2.7	38,866	1,770	876	33.2	1,034	46.6	7,742	131	119.2
Atch., Top. & S. Fe (incl. G. C. & S. F. & P. & S.F.)	1945	36,838	54,645	91,483	3.0	44,548	2,419	989	27.3	1,367	77.6	8,963	111	137.7
	1944	45,413	44,144	89,557	2.0	42,428	2,332	932	26.9	1,118	64.4	7,257	116	126.6
Chi., Burl. & Quincy	1945	15,614	26,343	41,957	2.2	43,993	2,715	1,324	32.9	1,440	62.6	6,698	105	95.8
	1944	16,128	25,907	42,035	2.5	41,021	2,538	1,227	33.3	1,362	60.4	6,505	110	96.7
Chi., Rock I. & Pac.†	1945	8,009	26,279	34,288	3.3	35,912	2,087	953	29.2	1,360	66.4	5,893	112	114.5
	1944	11,302	22,371	33,673	3.0	34,573	1,966	877	28.8	1,181	59.9	5,041	119	106.7
Denver & R. G. Wn.†	1945	7,667	6,591	14,258	5.5	36,343	2,248	1,141	31.4	1,217	48.4	7,165	171	94.6
	1944	8,135	5,918	14,053	3.7	33,809	2,229	1,110	32.1	1,037	42.9	6,289	171	86.2
Southern Pacific—Pac. Lines	1945	22,397	56,176	78,573	2.7	40,900	2,810	1,194	27.6	1,156	60.5	11,076	100	113.9
	1944	23,968	55,635	79,603	2.6	39,664	2,735	1,162	27.4	1,088	57.9	10,494	102	110.4
Union Pacific	1945	24,327	39,769	64,096	3.8	49,394	2,465	1,100	28.6	1,711	83.0	11,201	127	132.7
	1944	28,256	34,739	62,995	2.3	46,925	2,466	1,149	29.9	1,670	76.5	10,838	127	127.0
Southwestern Region:														
Mo.-Kans.-Texas Lines	1945	1,105	10,841	11,946	.2	32,927	1,891	878	31.1	2,069	101.5	6,604	85	160.9
	1944	1,867	8,157	10,024	.4	31,319	1,776	801	30.3	2,227	116.8	6,743	88	181.5
Missouri Pacific†	1945	11,071	31,487	42,558	1.4	40,991	2,556	1,172	30.6	1,555	75.8	8,884	105	117.8
	1944	11,860	32,492	44,352	1.0	41,046	2,445	1,107	31.2	1,474	73.6	9,118	105	122.7
Texas & Pacific	1945	1,248	8,555	9,803	1.1	39,042	2,155	916	27.2	1,421	75.3	6,912	95	98.9
	1944	1,567	7,345	8,912	1.6	40,802	2,306	944	26.7	1,649	94.3	7,941	94	114.3
St. Louis-San Francisco†	1945	5,483	16,113	21,596	1.6	32,107	1,701	792	30.4	1,519	72.4	6,379	130	117.8
	1944	7,649	11,728	19,377	2.0	32,293	1,691	782	30.8	1,512	74.2	6,168	136	120.1
St. Louis-San Fran. & Texas	1945	—	464	464	1.9	22,141	1,259	547	26.7	1,612	82.6	4,555	114	156.6
	1944	—	252	252	11.5	21,356	1,024	426	25.9	1,796	101.4	3,032	127	129.5
St. Louis Southw. Lines†	1945	780	8,999	9,779	.9	35,501	2,427	1,085	27.9	1,930	96.8	11,068	77	127.2
	1944	1,190	6,840	8,030	1.2	34,679	2,132	922	26.8	2,041	109.0	10,173	82	133.7
Texas & New Orleans	1945	3,287	20,065	23,352	2.1	31,865	1,778	779	28.8	1,416	73.8	7,311	93	158.6
	1944	3,780	16,864	20,644	3.1	32,545	1,823	804	28.7	1,404	72.2	6,764	90	143.4

Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.



Cuba Consolidated Gets New ALCO Fleet



HEAD-ON VIEW OF THE "367"—one of the ten locomotives recently delivered by American Locomotive Company to the Consolidated Railroads of Cuba.

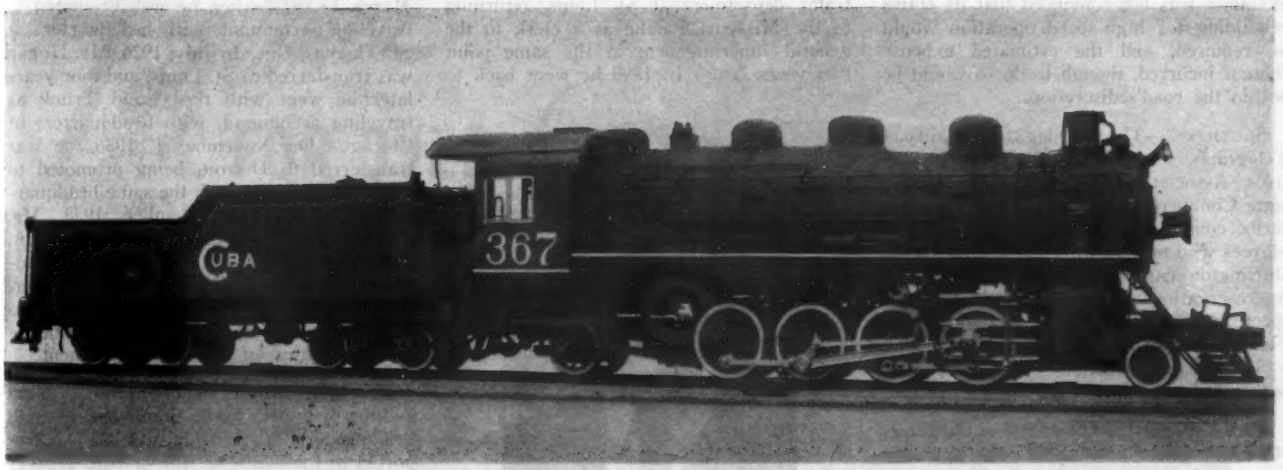
ON May 31 last, ten new ALCO 2-8-2 locomotives, made up into two trains of five each, pulled out of Havana, Cuba, on a 338-mile exhibition run to Camagüey, on the Cuba Consolidated.

At an impressive ceremony, the President of the Republic, and other high officials of the Cuban Government, inaugurating the induction of these locomotives into service, congratulated the railroad upon their acquisition, to the benefit of all Cuba.

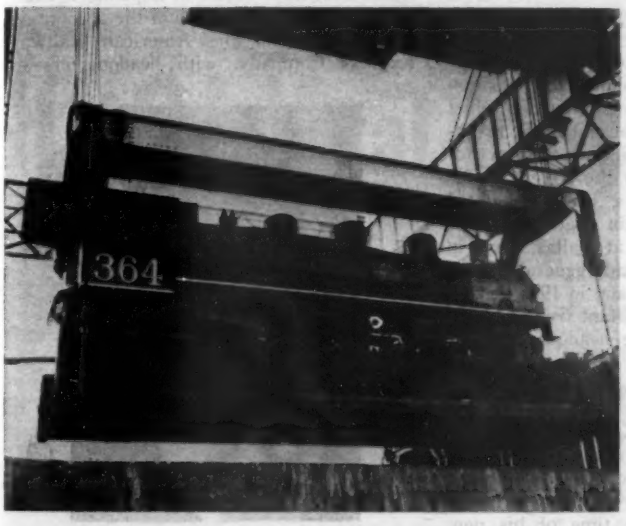
In a letter to the American Locomotive Company, the president of the Consolidated Railroads of Cuba cited Cuba's special needs, and expressed confidence in these new ALCO units "...confidence springing from our experience with others purchased from you in the past."

• • •

Here, and in many countries, more, and still more, locomotives are, and will be, needed. Conditions to be met, types to be supplied, will vary widely. It is good to feel that American Locomotive Company commands — and will uphold — the confidence of railroad men everywhere in its ability to design and build locomotives that answer every requirement completely.

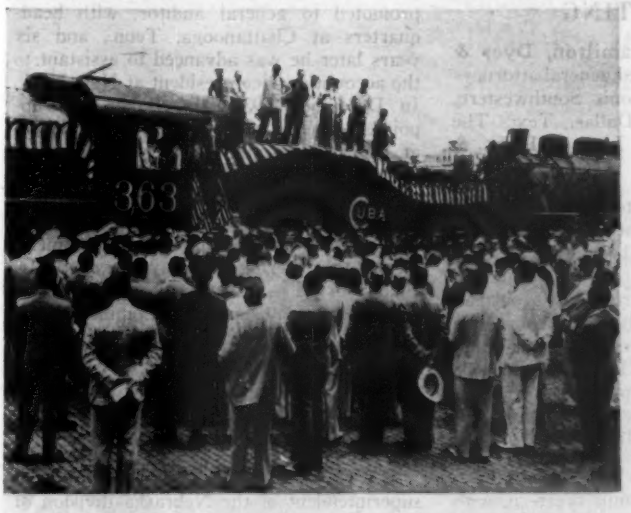


ONE OF TEN ALCO LOCOMOTIVES built for the Consolidated Railroads of Cuba.



DEBARKATION – first of the ten ALCO locomotives is hoisted from ship's hold in Cuba.

AT CAMAGÜEY –two trains of five new ALCO locomotives each arrive at Camagüey headquarters.



WELCOME TO CUBA –the new ALCO locomotives are inducted into the service of railroad and nation by the President of Cuba.

American Locomotive

Alco

THE MARK OF MODERN LOCOMOTION

that considerable repair work must be done on the track in the next few years, the examiner was not convinced that its entire rebuilding for high-speed operation would be required, and the estimated expense thereof incurred, though to do so would be within the road's discretion.

SOUTHERN.—The Order of Railroad Telegraphers and Railway Labor Executives Association have asked the Interstate Commerce Commission either to prescribe conditions for the protection of employees who may be affected, similar to the Burlington case provisions, or to extend its reservation of jurisdiction in that respect for a further 2-year period, in the Finance Docket 14294 proceedings, in which a line abandonment by this road was authorized.

UNION PACIFIC.—Division 4 of the Interstate Commerce Commission has extended for a further period of 2 years its reservation of jurisdiction with respect to the protection of employees who may be adversely affected by the line abandonment of the Oregon-Washington Railway & Navigation, authorized in 1943 in the Finance Docket No. 13780 proceedings. (Previous item in *Railway Age* of July 7, page 49.) The division noted without comment the carrier's contention that the brotherhoods' petition for such action, or for a prescription of conditions at this time, should be dismissed for the reason that they had not shown legally sufficient authorization to appear in behalf of individuals who may be affected.

Railway Officers

EXECUTIVE

William Dryden Waddell, chief accountant of the Canadian National, has been appointed assistant to vice-president and comptroller of the system, with headquarters at Montreal, Que.

Robert E. Boyle, Jr., has been elected chairman of the Southern Classification Committee at Atlanta, Ga., effective August 1, succeeding **Edward H. Dulaney,** who will retire from that position on that date. Mr. Dulaney has been serving as chairman of the committee since December 1, 1921, and was forced to retire from active duty because of continued ill-health.

Joseph F. Garvin, vice-president of the Missouri-Kansas-Texas at St. Louis, Mo., has been elected to the board of directors and at the same time has had his jurisdiction extended to include the Missouri-Kansas-Texas Company of Texas, with headquarters at St. Louis and Dallas, Tex. Mr. Garvin was born at St. Louis on October 6, 1878, and entered railway service in 1893 as a messenger with the Missouri Pacific. In the following year he was made clerk to the general manager at St. Louis, and during the next two years he served as clerk and stenographer to the general superintendent at the same point. In 1896 Mr. Garvin entered the service of the Katy as a stenographer in the freight traffic department at St. Louis, returning to the Missouri Pacific as a clerk to the general superintendent at the same point two years later. In 1899 he went back to

Joseph F. Garvin

the Katy as secretary to the vice-president and traffic manager, holding this position until 1902, when he was promoted to chief clerk to the vice-president and traffic manager. In 1908 Mr. Garvin was further advanced to chief clerk in the freight traffic department at St. Louis, being appointed assistant general freight agent on the Missouri-Kansas-Texas at Dallas, Tex., in 1911. In 1914 he was made general freight agent at the same point and in 1926 he was further promoted to assistant freight traffic manager with the same headquarters. In 1927 Mr. Garvin was appointed freight traffic manager of the Katy lines at St. Louis. In 1931, when the position of freight traffic manager of the Katy lines in Texas was created, Mr. Garvin was appointed to that position with headquarters at Dallas and in January, 1935, he was elected to the position he held at the time of his new promotion.

FINANCIAL, LEGAL AND ACCOUNTING

The legal firm of **Hamilton, Dyer & Shults** has been appointed general attorneys in Texas for the St. Louis Southwestern, with headquarters at Dallas, Tex. The firm succeeds **Locke, Locke, Dyer & Purnell.**

T. J. Gracey, auditor, Grand Trunk Western (Canadian National subsidiary) at Detroit, Mich., has been appointed an assistant comptroller of the Canadian National, with headquarters at Montreal, Que. Mr. Gracey will have supervision over regional disbursements accounting. The appointment of A. H. Hogan to succeed Mr. Gracey in the position of auditor, Grand Trunk Western at Detroit was noted in the *Railway Age* of July 21.

Alfred H. Hogan, whose promotion to auditor of the Grand Trunk Western, with headquarters at Detroit, Mich., was reported in the *Railway Age* of July 21, was born at St. Louis, Mo., on February 5, 1903. He entered railway service on September 1, 1918, as an office boy for the auditor of disbursements of the Wabash, subsequently serving in various clerical capacities until March 1, 1924, when he was promoted to traveling accountant, with headquarters at St. Thomas, Ont. In July, 1926, Mr. Hogan was transferred to St. Louis, and four years later he went with the Grand Trunk as traveling accountant, with headquarters at Chicago. On November 1, 1936, he was transferred to Detroit, being promoted to special accountant, with the same headquarters, in 1937. In September, 1938, Mr. Hogan was advanced to general accountant, and in August, 1939, he was further advanced to assistant to the general manager. On March 1, 1942, he was promoted to assistant auditor at Detroit, the position he held at the time of his new appointment.

Sterling Baker, whose promotion to auditor of the St. Louis Southwestern with headquarters at St. Louis, Mo., was reported in the *Railway Age* of July 21, was born at Westminster, Md., and is a graduate of Western Maryland College. He entered railway service in September, 1920, as a special representative of the accounting vice-president of the American Railway Express Company, with headquarters at

Sterling Baker

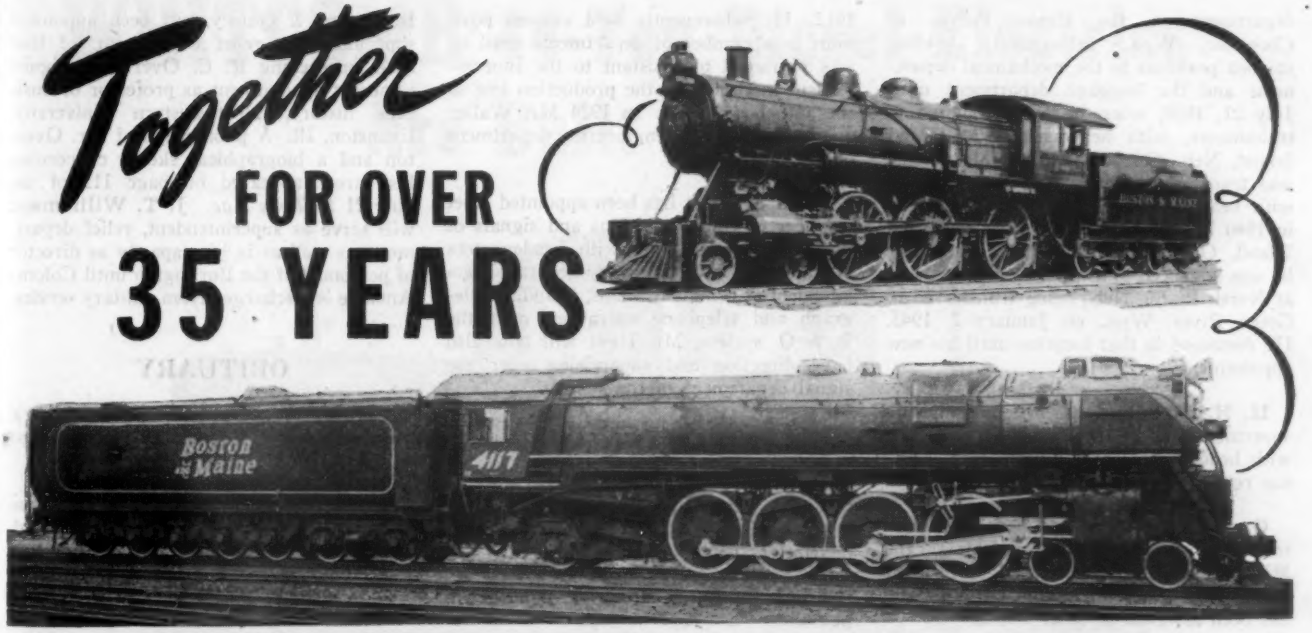
New York. In December, 1922, he was promoted to general auditor, with headquarters at Chattanooga, Tenn., and six years later he was advanced to assistant to the accounting vice-president at New York. In December, 1931, Mr. Baker was appointed general auditor, with headquarters at Chicago, resigning four years later to enter private business. In April, 1943, he went with the St. Louis Southwestern as auditor of disbursements, the position he held at the time of his new appointment. Prior to entering railway service Mr. Baker served as valuation accountant with the Interstate Commerce Commission at Washington, D. C., and as chief field accountant with the United States Railroad Administration.

OPERATING

E. H. Bailey, whose promotion to superintendent of the Nebraska division of the Union Pacific, with headquarters at Omaha, Neb., was reported in the *Railway Age* of July 14, was born at Elmo, Mo., on September 13, 1904. He entered railway service on August 12, 1922, in the car

News Department continued on next left-hand page

Together FOR OVER 35 YEARS



HSGI Vital Parts and the *Boston and Maine*

VITAL parts of HUNT-SPILLER GUN IRON have maintained the power and efficiency of Boston and Maine locomotives from the era of the "old timer" pictured above to that of the 4100's, representing the newer power of that progressive road.

The Boston and Ma ıe's long-time reliance on this quality material is but one example of 35 important railroads which have used HSGI parts since 1910 or before. Proof enough to convince anyone that HUNT-SPILLER GUN IRON is a staunch resister of wear in cylinders, valves, and other vital locomotive parts.

HUNT SPILLER GUN IRON HSGI *AIR FURNACE PROCESS*

HUNT-SPILLER MFG. CORPORATION

N. C. RAYMOND, *President* — E. J. FULLER, *Vice-Pres. & Gen. Mgr.*

383 Dorchester Ave. ★ South Boston 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 5575 Cote St. Paul Rd., Montreal, P. Q.
Export Agents:
International Rwy. Supply Co., 30 Church Street, New York 7, N. Y.

- Cylinder Bushings
- Cylinder Packing Rings
- Pistons or Piston Bull Rings
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- Crosshead Shoes
- Hub Liners
- Shoes and Wedges
- Floating Rod Bushings
- Light Weight Valves
- Cylinder Liners and Pistons for Diesel Service
- Dunbar Sectional Type Packing
- Duplex Sectional Type Packing for Cylinders and Valves (Duplex Springs for Above Sectional Packing)
- Cylinder Snap Rings
- Valve Rings, All Shapes

department of the Union Pacific at Cheyenne, Wyo., subsequently holding various positions in the mechanical department and the baggage department until July 21, 1938, when he was promoted to trainmaster, with headquarters at Grand Island, Neb. On July 5, 1939, Mr. Bailey was transferred to the Wyoming division, with headquarters at Laramie, Wyo., and in 1940 he was transferred back to Grand Island. On December 31 of the latter year he was advanced to assistant superintendent at North Platte, Neb., being transferred to Green River, Wyo., on January 7, 1945. He remained in that location until his new appointment.

H. H. Fitzsimmons, assistant division superintendent of the Canadian Pacific, with headquarters at Medicine Hat, Alta., has retired after 38 years of service.

G. W. Warmack has been appointed trainmaster of the Illinois division of the Missouri Pacific, with headquarters at Bush, Ill., succeeding **R. J. Dugan,** who has been assigned to other duties.

S. F. O'Brien, assistant trainmaster of the Denver & Rio Grande Western at Denver, Colo., has been promoted to terminal trainmaster, with the same headquarters.

T. W. Flickinger has been appointed assistant to manager, Military Transportation Section, Car Service Division, Association of American Railroads, succeeding J. J. Kelley, assistant manager, who was recently appointed manager of the section.

Leonard H. Hale, assistant superintendent of transportation of the Denver & Rio Grande Western at Denver, Colo., has been promoted to superintendent of the Alamosa division, with headquarters at Alamosa, Colo., succeeding **Claude B. Carpenter,** who died recently.

ENGINEERING & SIGNALING

W. Walkden, bridge engineer, western region, of the Canadian National, with headquarters at Winnipeg, Man., has retired.

E. H. Robinson, signal supervisor of the Atchison, Topeka & Santa Fe at Amarillo, Tex., has been promoted to general signal supervisor, with the same headquarters.

S. G. Smith has been appointed engineer of survey, lands and property, Central region of the Canadian National, with headquarters at Toronto, Ont. The position of regional land surveyor formerly held by Mr. Smith has been abolished.

P. H. Waller, assistant to the chief engineer of the Pullman Company, at Chicago, has been promoted to assistant chief engineer, with the same headquarters. **N. F. Sorgenfrei,** supervisor of laboratory and inspection, has been advanced to assistant engineer of tests, with headquarters as before at Chicago. Mr. Waller entered service with the Pullman Car Works as a messenger boy on June 17, 1912. He subsequently held various positions in a number of departments until he was promoted to assistant to the superintendent in charge of the production line in the auto body plant. In 1924 Mr. Waller was assigned to the engineering department of the Pullman Co.

Adlai S. Hunt has been appointed chief engineer of communications and signals of the Baltimore & Ohio with headquarters at Baltimore, Md. Formerly general superintendent of communications, including telegraph and telephone operations over the B. & O. system, Mr. Hunt will now also have direction and supervision over the signal department of the system.

MECHANICAL

D. J. Coon, mechanical supervisor of the New York, Chicago & St. Louis, has been appointed fuel supervisor with headquarters as before at Cleveland, Ohio.

Sherman O. Rentschler, whose appointment as superintendent of motive power of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill., was reported in the *Railway Age* of June 23, was born at Verdon, Neb., on October 12, 1904, and is a graduate of the University of Nebraska. He entered railway service as a special apprentice of the Missouri Pacific in September, 1923, subsequently serving as a machinist, division foreman, enginehouse foreman and general passenger shop foreman at various points on the road, including St. Joseph, Mo., Omaha, Neb., and Lincoln; Wichita, Kan., and Hoisington and Ossawatomie, and Kansas City, Mo. After serving as general shop foreman at Sedalia, Mo., Mr. Rentschler was promoted in August, 1942, to shop superintendent, with the same headquarters. On October 1, 1943, he was advanced to mechanical superintendent of the Southern district, with headquarters at St. Louis, and in November, 1944, he was promoted to assistant chief mechanical officer, resigning from that position on April 1, 1945, to become superintendent of motive power of the E. J. & E.

Sherman O. Rentschler

SPECIAL

Lieutenant-Colonel L. F. Annable, now on leave of absence from the Chicago, Burlington & Quincy, has been appointed superintendent, relief department, of that road, succeeding R. C. Overton, resigned to accept appointment as professor of business history, Northwestern University, Evanston, Ill. A photograph of Mr. Overton and a biographical sketch concerning his career appeared on page 112 of the July 21 *Railway Age*. **J. T. Williamson** will serve as superintendent, relief department, as well as in his capacity as director of personnel of the Burlington until Colonel Annable is discharged from military service.

OBITUARY

Charles W. Davis, assistant general manager of The Pullman Co., at Chicago, died in a hospital in that city recently.

C. H. Olson, who retired in 1940 as auditor of The Pullman Co., with headquarters at Chicago, died at his home in that city recently.

Charles Louis Bateman, general freight agent of the Southern at Atlanta, Ga., died there on July 17. He had served the Southern for 35 years.

W. F. Rech, bridge and building engineer of the Alton, with headquarters at Chicago, died at his home in that city on July 24 following a long illness.

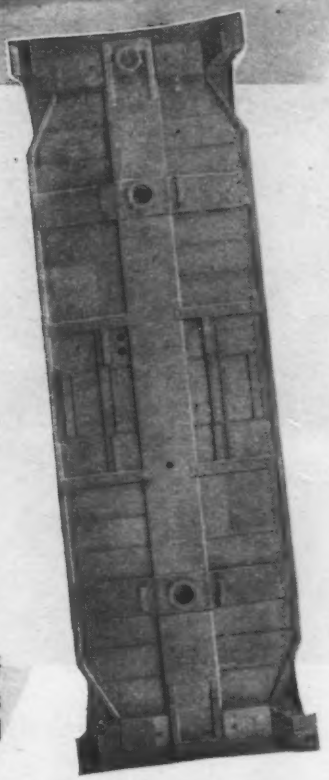
Wilmar G. Wagner, who retired in 1936 as freight traffic manager of the Chicago, Burlington & Quincy, with headquarters at Chicago, died at Burlington, Iowa, on July 17.

John A. Anderson, who retired in 1930 as superintendent of the Petoskey-Chicago division of the Pere Marquette, died in a Grand Rapids (Mich.) hospital on July 24.

Marion Jay Parr, retired superintendent of the Central of Georgia, whose death on June 18 was reported in the *Railway Age* of July 14, entered railroading with the Central of Georgia on March 18, 1907, as draftsman in the engineering department at Savannah, Ga., and was promoted to assistant engineer in January, 1909, and to pilot engineer in May, 1914. One year later he was named supervisor of bridges and buildings at Columbus, Ga., and in January, 1917, he was appointed roadmaster of the Macon division at Macon, Ga. After serving as a 1st lieutenant, Army Engineers, in the first world war from June, 1918, to June, 1919, he returned to the Central of Georgia as assistant trainmaster of the Southwest and Columbus divisions successively, and in October, 1919, he was appointed trainmaster of the Southwest division, remaining in that post until October, 1925, when he was named superintendent of the Macon freight terminals. He returned to the Southwest division as trainmaster at Albany, Ga., in September, 1930, and after transferring to Cedartown, Ga., one year later, he was appointed superintendent of the Savannah division at Savannah, Ga., on May 1, 1937, the post he held at the time of his retirement because of ill health in December, 1944.

WHITCOMB 44-Ton Diesel Electrics Are Built To Last

- Box-Type Bolster Sections*
- Frame Center Reinforced with I-Beam Section Diaphragm*
- Heavy Car Sills Run Entire Length of Frame*
- Heavy Plate Gussets Reinforce Bumpers*
- Heavy Channel Sections Form Outside Sills*
- Rib-Bar Supported Deck Plate*



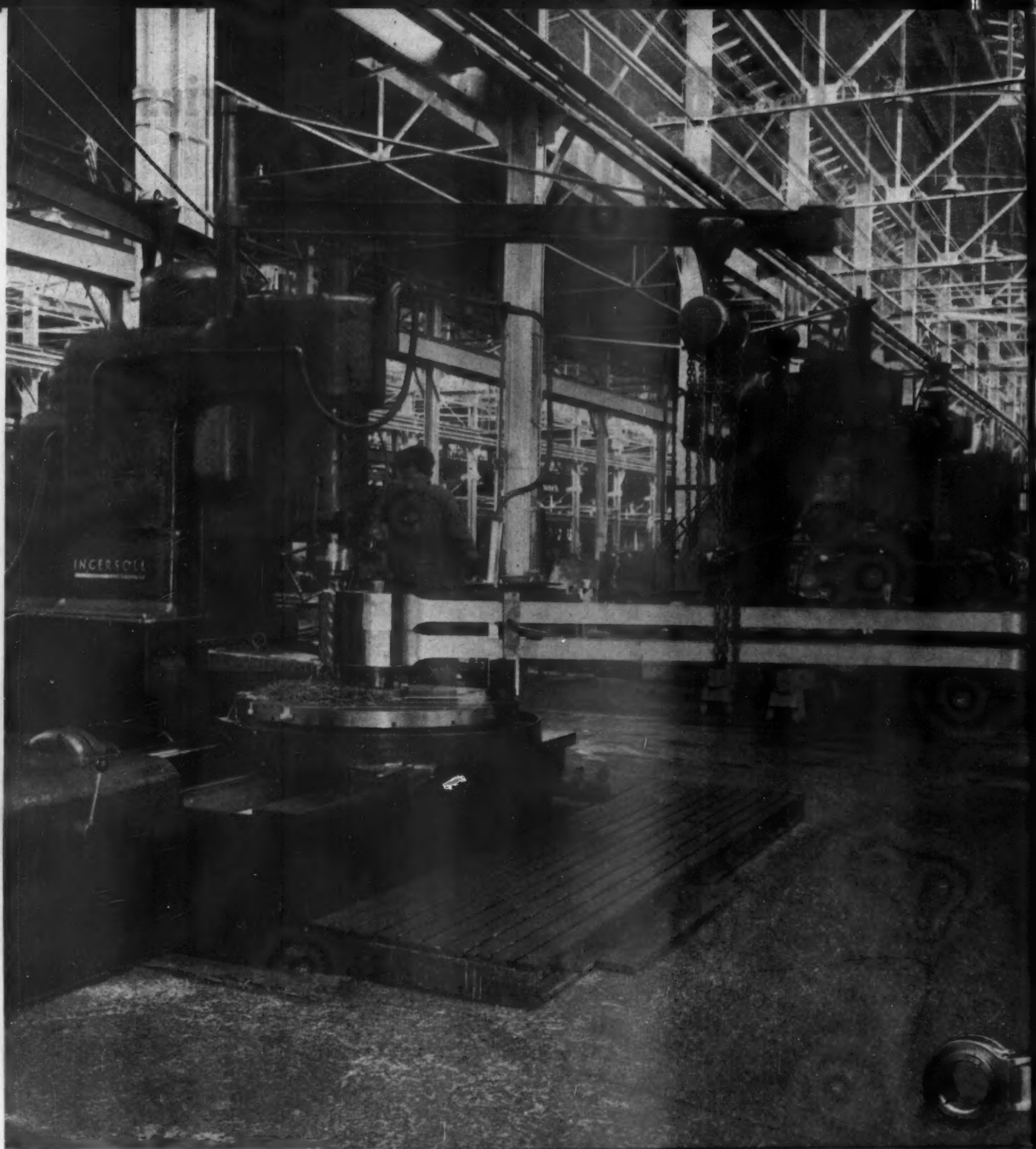
The Rugged Construction of Whitcomb-Built Locomotives Provides Strength and Stability to Assure Long and Dependable Service.

BLW THE BALDWIN GROUP

THE WHITCOMB LOCOMOTIVE CO.

ROCHELLE, ILL.

Subsidiary of THE BALDWIN LOCOMOTIVE WORKS



Channeling and "bossing" the back end of a locomotive main rod on a modern rotary table-type milling machine.

At the right is a set of light-weight, "I" section rods for a modern 4-8-4 type locomotive.

BALDWIN SERVES THE NATION WHICH THE RAILROADS HELPED TO BUILD

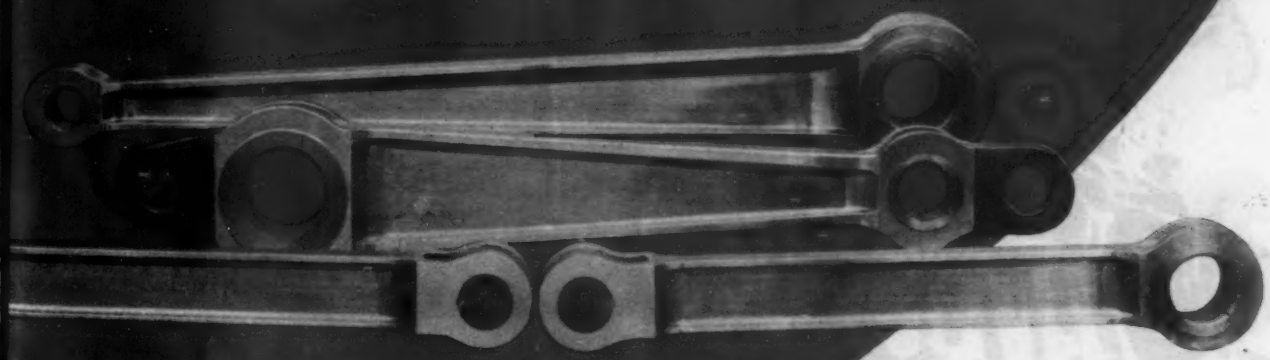
Connecting Rods a BALDWIN specialty

Selection of material, proper design, modern manufacturing methods and fine workmanship are combined to insure the high quality of Baldwin connecting rods.

Rods must be light, to help reduce dynamic augment. They must be tough and strong enough to insure safety and trouble-free service. Finish on each rod must represent the most careful workmanship, to prevent imperfections that might cause rod failure.

Thousands of rods are giving safe, economical service on Baldwin locomotives throughout the world.

Let our engineers tell you more of the reasons why you should come to Baldwin when you need connecting rods.



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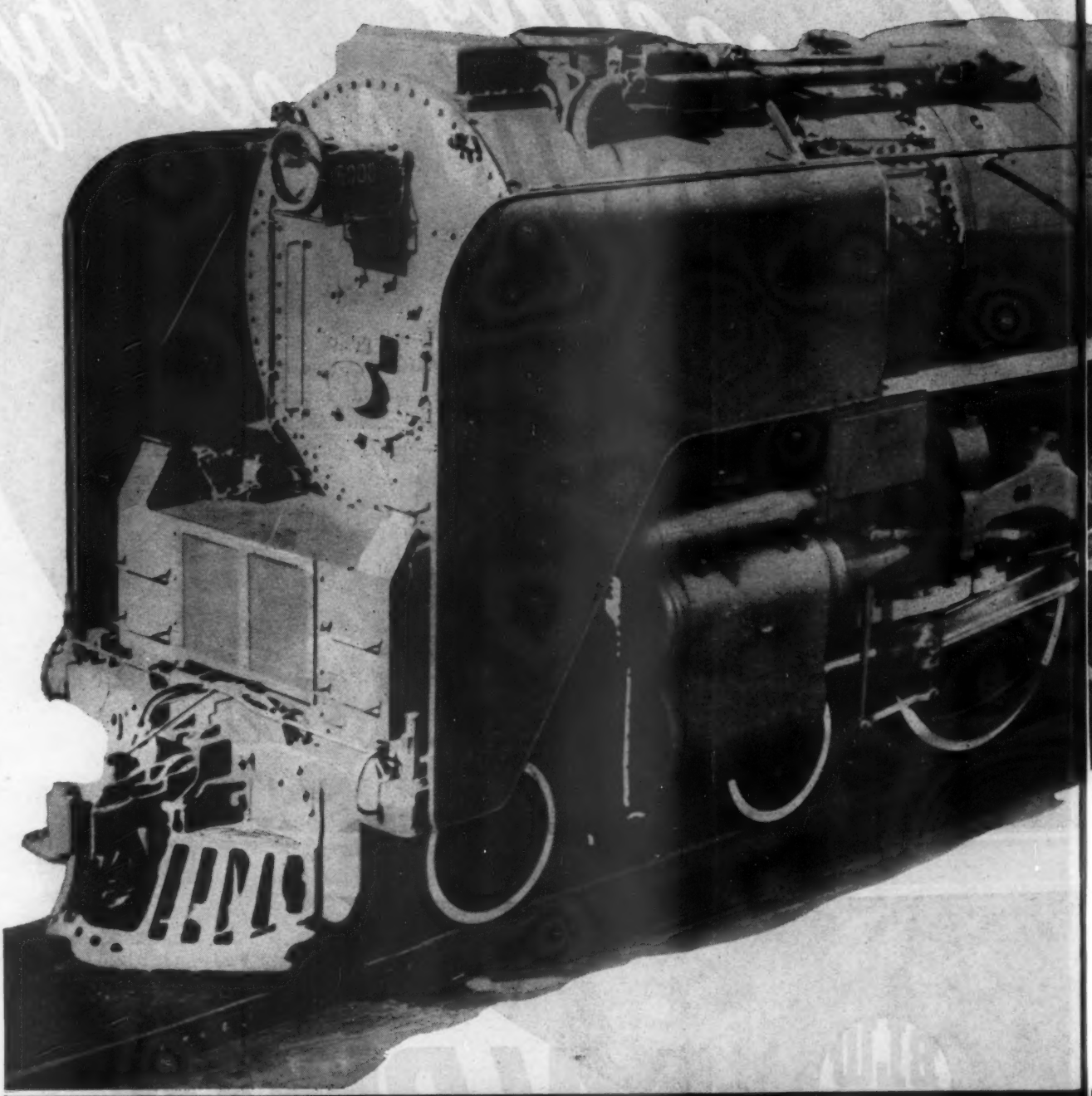
The Baldwin Locomotive Works, Philadelphia 42, Pa., U. S. A. Offices: Philadelphia, New York, Chicago, St. Louis, Washington, San Francisco, Boston, Cleveland, Pittsburgh, Detroit, Houston.

High Availability of Modern ST
Railroads Establish All-Time Re



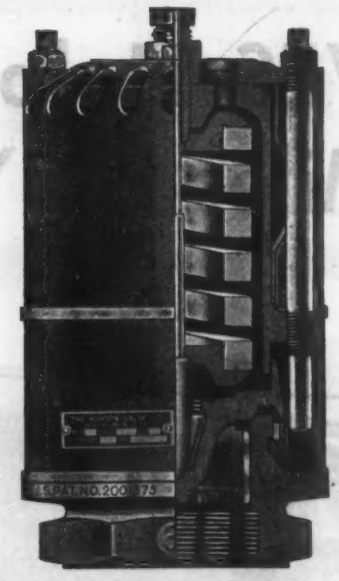
FLANNERY BOLT C

STEAM LOCOMOTIVES Helps Record for Net-Ton-Miles Per Year

HOLLOW *Flexible* STAYBOLTS

A Contributing Factor

COMPANY BRIDGEVILLE, PENNSYLVANIA

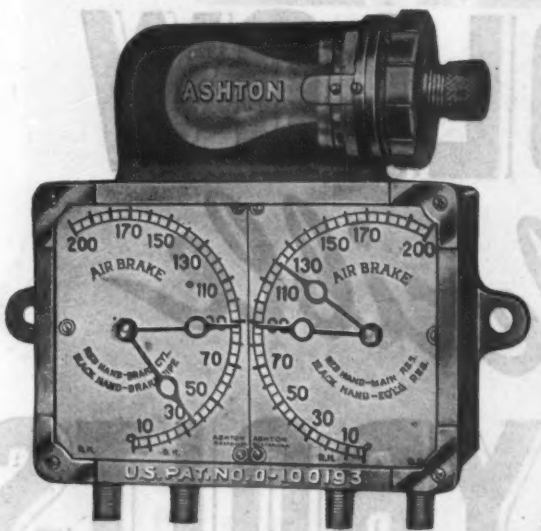


ASHTON FC-10 MUFFLED SAFETY VALVE

The FC-10 Muffled Locomotive Safety Valve was developed to meet the condition of increased evaporating efficiency on high pressure locomotive boilers. It has operated successfully for a period of over ten years in road tests and regular service on locomotives carrying pressures up to 300 pounds per square inch. Throughout this period it has operated without the necessity of the renewal of any parts.

ASHTON NO. 52 DI-3 6¼" DOUBLE DIAL LOCOMOTIVE STEAM GAGE, LAMP HOUSING CAST INTEGRAL WITH CASE

The New Style No. 52 DI-3 Locomotive Steam Gage eliminates the need of separate boiler pressure gages for engineer and fireman. Each face of the Gage has a dial and hand illuminated by a standard electric lamp bulb and can be seen from either right or left side of the locomotive cab. Dial has a permanent white porcelain surface which is positively non-glare and can readily be cleaned.



ASHTON NO. 62 QI-7 QUADRUPLEX ILLUMINATED LOCOMOTIVE AIR BRAKE GAGE. LAMP HOUSING CAST INTEGRAL WITH FACE RING.

The principal object of this new design is to place in a centralized position the two air gages and the indicating hands of same as near together as possible, so that the engineer by concentrating his vision particularly on the brake pipe and equalizing reservoir hands may regulate more uniformly and accurately his brake applications and secure smooth handling of the train.

ASHTON NO. QI-9 QUADRUPLEX ILLUMINATED LOCOMOTIVE STOKER GAGE

The Ashton Locomotive Stoker Gage is a combination of two duplex gages, ordinarily used in stoker service, mounted in heavy rectangular dust-proof case.

Combining the two gages in one case reduces the space required for this equipment in locomotive cabs. Especially adapted to service on the HT and HT-I stokers or other types where three or four pressure indications are required.

THE ASHTON VALVE COMPANY

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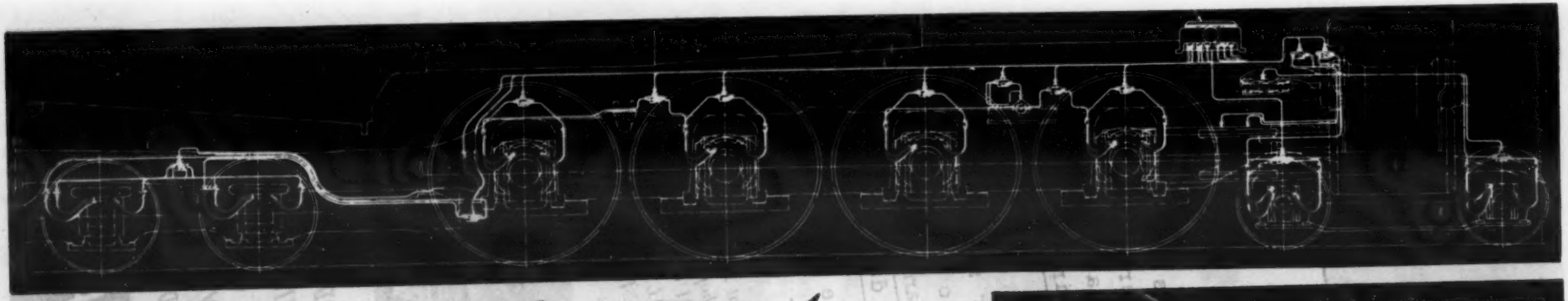

SPECIFY Flex-O-Tube

HIGH PRESSURE HYDRAULIC HOSE ASSEMBLIES

For Efficient Chassis Lubrication

Efficient, economical operation of chassis locomotive lubricators depends in no small degree on the design and workmanship of the flexible hose assembly. Flex-O-Tube High Pressure Hose Assemblies provide flexible, trouble-free connections for all lubrication lines to journals, hubs, shoes and wedges, as shown in the above typical application.

In addition, Flex-O-Tube Assemblies are also used by many roads to assure efficient lubrication to guides, crossheads and other vital locomotive parts.

FLEX-O-TUBE COMPANY

Detroit Lafayette and Fourteenth Streets Michigan

BELIEVE IT-OR NOT

HENNESSY LUBRICATOR CO., Inc.

MEMO

Hennessey Mechanical Journal Lubricators installed in this 2-8-2 locomotive which averaged over 8500 miles a month in fast freight service, accumulated 316,000 miles without requiring repairs of any kind to driving boxes, hub faces or driving journals.

The day this locomotive was delivered for service it hauled its rated tonnage from Baltimore to Chicago without any preliminary break-in period, and remained continuously available for 4 years and 10 days.

Then Class 4 repairs disclosed only 2 loose crown bearings, and no journals required turning.

Baltimore & Ohio No. 4482—rebuilt at Mt. Clare Shops, delivered for service March 5, 1941, shopped for Class 4 repairs March 15, 1945. ENGINE TRUCK, DRIVING AND TRAILER TRUCK JOURNALS EQUIPPED WITH HENNESSEY MECHANICAL JOURNAL LUBRICATORS.

BY DELAYING SHOPPING FOR RUNNING GEAR REPAIRS INDEFINITELY ● THUS MAKING POSSIBLE A TREMENDOUS INCREASE IN CONTINUOUS LOCOMOTIVE MILEAGE ● HENNESSEY MECHANICAL JOURNAL LUBRICATORS ARE DOING MORE TO INCREASE OVERALL AVAILABILITY OF MOTIVE POWER THAN ANY OTHER RECENT STEAM LOCOMOTIVE DEVELOPMENT.

HENNESSY LUBRICATOR COMPANY, INC.

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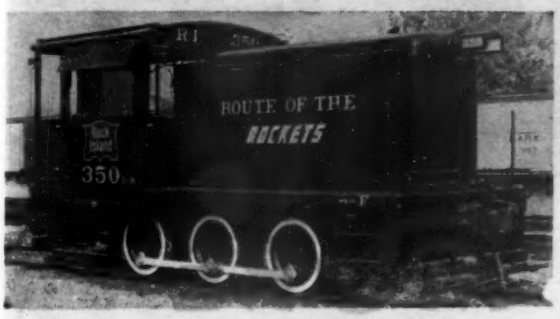
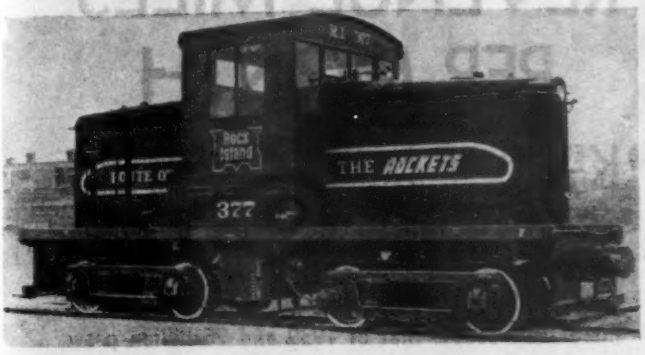
Put These Star Performers to Work on ALL Locations Now Served by LARGER-THAN-NECESSARY Switchers



Davenport 30-Ton Diesel-Mechanical Switcher



Davenport 44-Ton Diesel-Electric Switcher

OVER-POWER is a major source of WASTE. On any location where switching or branchline traffic, now handled by obsolete steamers or heavy Diesels, could be served by Davenport Lighter Diesel Switchers, a serious leak exists. Multiplied by the number of similar over-powered locations and the drag on overall operating economy becomes startling.

So drastic are the savings — so definite are the operating advantages offered by Davenport Lighter Diesel Switchers — that every farseeing rail executive will find food for thought in a study of the Lighter Diesel Switcher — Pioneered by Davenport.

Post-War railroading will be confronted by new forms of competition and public demand for improved service. The need for achieving and maintaining top efficiency will be greater than ever before.

That Davenport Lighter Diesel Switchers quickly turn their investment through direct saving is a matter of record, proven time and again.

DAVENPORT LIGHTER DIESEL SWITCHERS

offer these impressive advantages

100% availability for one, two or three eight-hour shifts as desired.

★

Higher power ratio at slow speeds.

★

Quick acceleration and smoother, more sensitive response to controls.

★

Exceptional visibility for safety and efficiency.

★

Independence from engine houses, coal docks, ash pits and water facilities.

★

QUICK return on investment through DIRECT SAVINGS.

Complete Information is Available to Railroad Executives on Request

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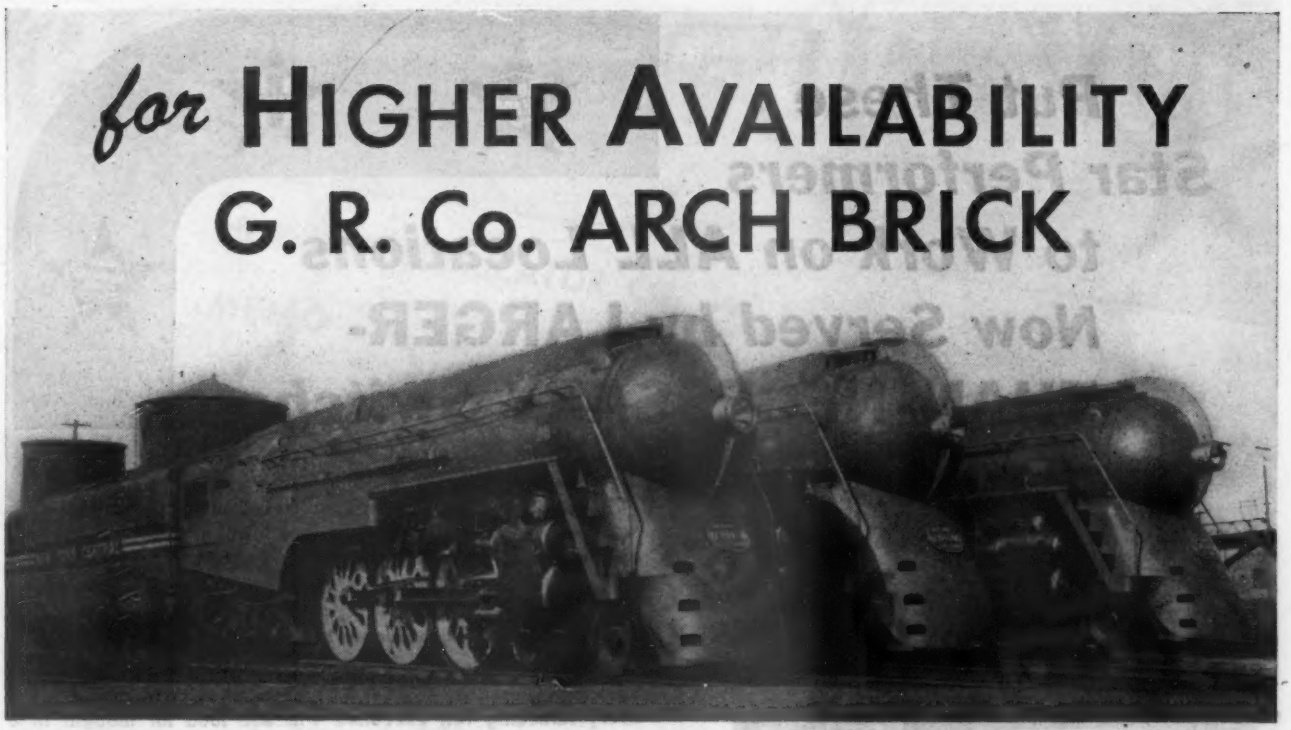
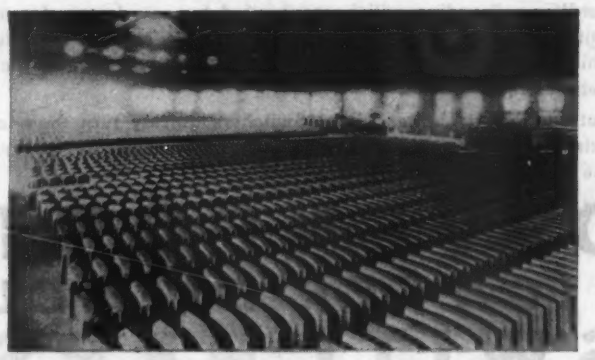
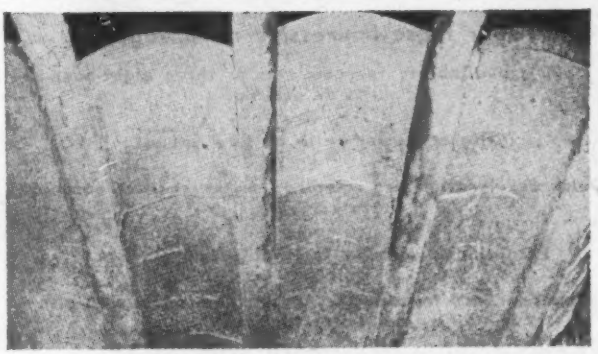
for HIGHER AVAILABILITY
G. R. Co. ARCH BRICK







UPPER PHOTOGRAPH SHOWS
Arch Brick on the drying floor of our Orviston Plant.

LOWER PHOTOGRAPH SHOWS
Unretouched photo of General Refractories Arch Brick after unusually severe service in a stoker fired locomotive.

MORE REVENUE MILES PER MONTH

KEEPING steam locomotives in serviceable condition is one of the outstanding factors which has enabled the railroads to make 1944 the biggest year in history of American railroading. In that year 737-billion ton miles of freight were carried, more than double that of 1939 and 96 billion passenger miles, four times that of 1939.

The long life and correct design of GENERAL REFRACTORIES Heavy Duty Arch Brick have contributed much to increased locomotive availability and high mileage between replacements. In addition to greater protection to locomotive service—GENERAL REFRACTORIES Arch Brick economies include lower maintenance costs, lower fuel consumption and reduction in terminal delays.

GENERAL REFRACTORIES COMPANY
Philadelphia 7 RAILWAY DEPARTMENT Penna.

MODERN ROLLING STOCK

Excellently Controlled

THE safe and reliable handling of heavily-loaded freight trains at higher speeds with modern rolling stock is in large measure responsible for new high records in net ton-miles handled and net ton-miles per train hour.

These new highs in the efficiency of freight train operation are made possible by the "AB" Brake which not only provides fast, positive and uniform retardation, but has many advanced features including calibration for better slack control even on the longest trains.

Railroads planning for maximum rail transportation progress and greater service to shippers in the post-war era must take into consideration that the "AB" Brake with its effective and efficient retardation control is a necessity which will meet modern requirements.

The New York Air Brake Company

420 Lexington Ave., New York 17, N.Y. Plant: Watertown, N.Y.

It's an Every Day Occurrence

with

HANNA-FIRED LOCOMOTIVES

to BY-PASS

"FIRE-CLEANING" at TERMINALS

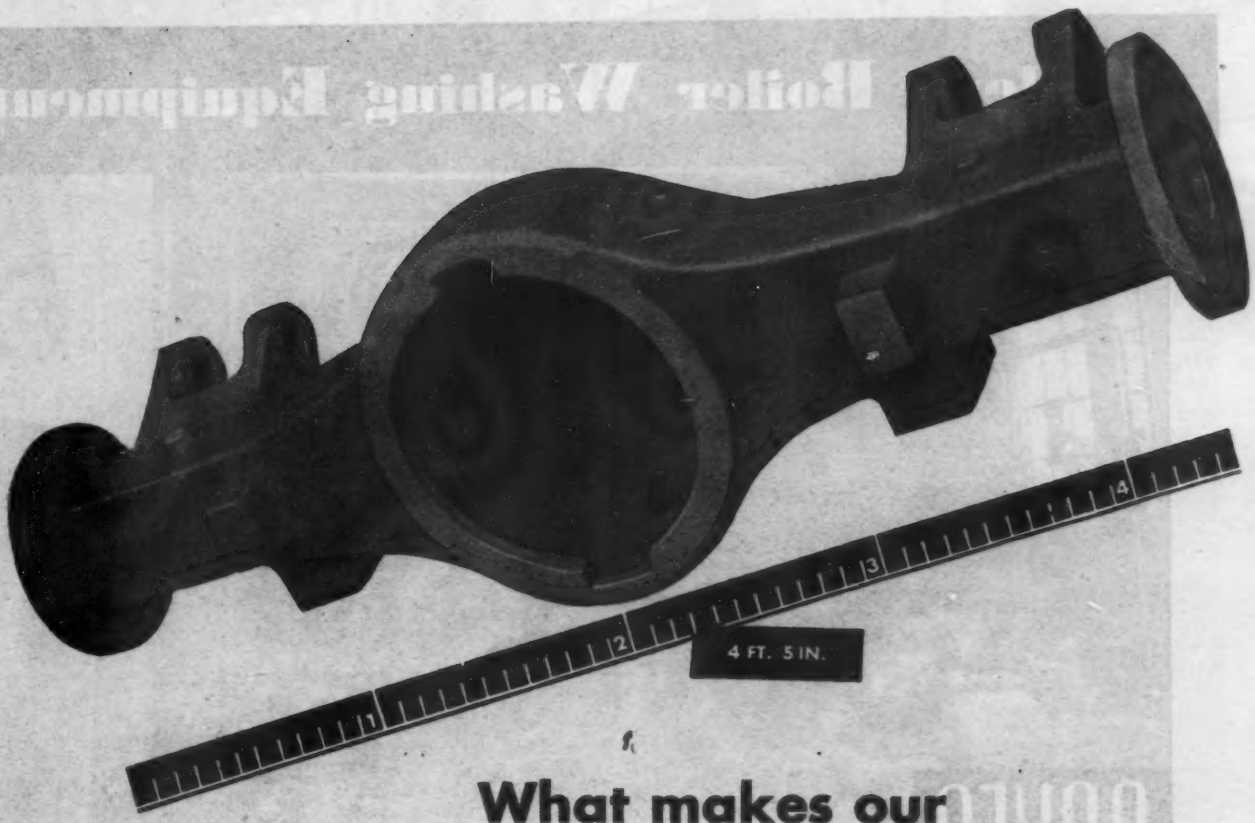
It's the HANNA System of Firing that does it

This also is worth investigation

For over 30 years –
HANNA STOKER DEVELOPMENT has kept pace with increased locomotive power, efficiency, and economy.

THE HANNA STOKER COMPANY

Cincinnati 27, Ohio



What makes our Motor Vehicles so GOOD?

• The war years have shown how supremely good American motor cars and trucks are.

Millions of the cars running today have stood up, year after year, with a minimum of attention, and almost no replacement parts.

One reason for this record—and an important reason—is that so many crucial automotive parts are steel castings.

These are usually the parts that must take the hard knocks and the grief—parts that are strong, to resist wear and fatigue—parts that have built into them the steel properties that permit them to do their job. A notable example is the truck rear axle housing pictured above.

Here is more proof of the advantages of steel castings—a definite assurance that steel castings can do for your product exactly what they are doing for motor vehicles.

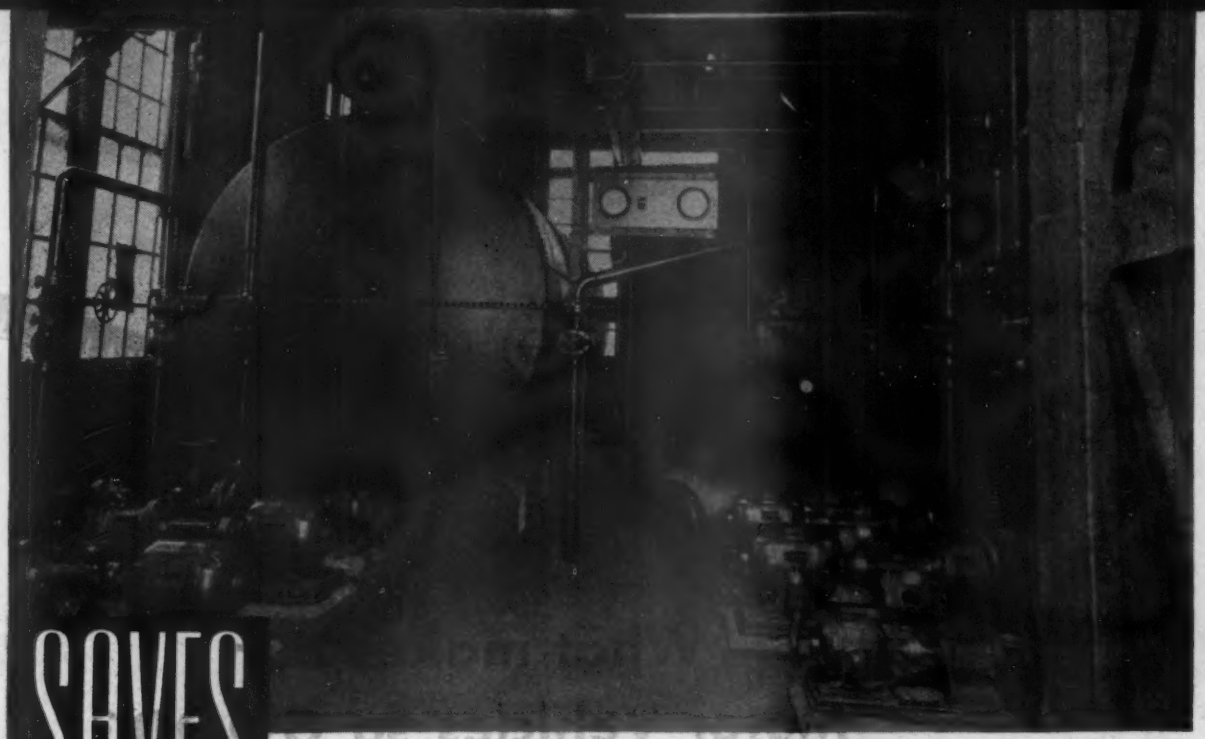
Organized research and broad experience enables the steel founder to deliver to you parts with the properties you need specified in advance.

Steel castings are versatile, dependable, economical. Let your own foundryman tell you more about their possibilities for you. Or write to Steel Founders' Society, 920 Midland Bldg., Cleveland, Ohio.

MODERNIZE AND IMPROVE YOUR PRODUCT WITH

STEEL CASTINGS

Modern Boiler Washing Equipment



SAVES time, labor, fuel, water, steam

ALL NATIONAL Boiler Washing Systems are engineered to meet the special requirements of each installation. These systems are available with either steam pumps or electric driven pumps, making them entirely automatic in operation and completely self-sustaining.

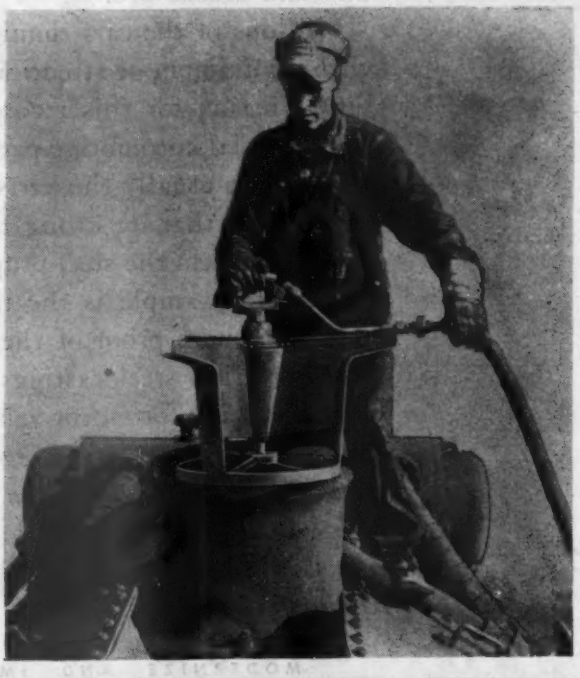
Inspections and recommendations made without charge or obligation to railroads.

★ ★ ★

Gale Compressed Air Locomotive Drafter

The compact, lightweight Gale Locomotive Drafter can be handled by one man and is specifically designed to eliminate the use of steam blowers in drafting locomotives in engine houses.

Write Today For Complete Information.



NATIONAL BOILER WASHING SYSTEMS

80 E. JACKSON BLVD. CHICAGO 4, ILL.

FOR "TRIAL BY FIRE"—
IT'S MANGANESE-VANADIUM STEEL

Among the toughest applications ever devised for alloy steels are the firebox and boiler plates of modern high-speed steam locomotives.

Because Manganese-Vanadium Steel provides the right combination of workability and weldability with high strength and ductility, and maintains these desirable properties in superlative degree at boiler temperatures, it has established itself as a primary alloy steel for boiler and firebox plates.

This combination of necessary qualities is winning increased recognition in many fields where *alloy steels will do the job better!*

Detailed information on properties, typical applications and specifications for Manganese-Vanadium Steel are available on request.

MAKERS OF VANCORAM FERRO ALLOYS AND METALS

All government restrictions on Vanadium shipments have been lifted. Stocks on hand assure prompt shipment and quick delivery of Ferro Vanadium and other Vanadium products to your steel maker.

VANADIUM CORPORATION OF AMERICA

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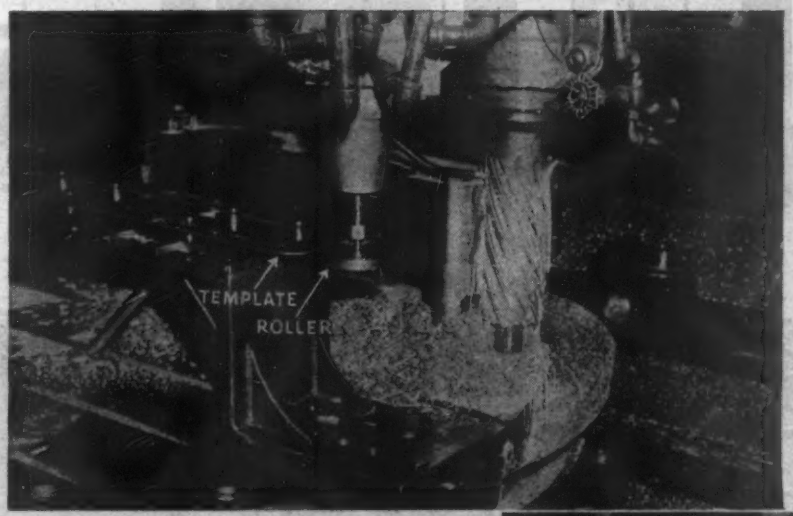
Let Us Help

Get Locomotives Back in Service



SPEED-UP OUTPUT and REDUCE COSTS WITH

TURCHAN Follower Units Attached to Either New Machine Tools or to Machines Already in Use.

Now installed in numerous locomotive shops doing an outstanding job machining internal and external contours on rods, links, crank arms, frames, valve motion and other locomotive parts.

Machining links — outside and inside contours look alike — the TURCHAN WAY!

SIMPLE and EFFICIENT:

A roller, traversing templet contours, actuates the hydraulic feed mechanism in one, two or three dimensions, as may be desired. Feed can be varied from a feather light touch to as heavy a cut as the tool will stand.

Feed control is entirely hydraulic. *(A simple, single operator's control wheel does the trick.)* No complicating or supplementary devices are required.

Consistent duplication is certain through the use of sheet metal templets.

External and internal contours on ends of main rods — Machined with TURCHAN Hydraulic Followers — No hand feeding.

INFINITELY VARIABLE HYDRAULIC FEEDS INSURE:

- Increased Output
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- Elimination of Layout-work
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TURCHAN is an investment that pays excellent dividends, not only in reduced costs but in ACCURACY — UNIFORMITY and a much-to-be-desired FINISH.

We will be glad to send you literature and discuss details with you upon request. Our Field Engineers are at your service.

Links machined with TURCHAN Hydraulic Follower — only one set-up — No hand feeding required.

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Exclusive Distributor Railway Div.

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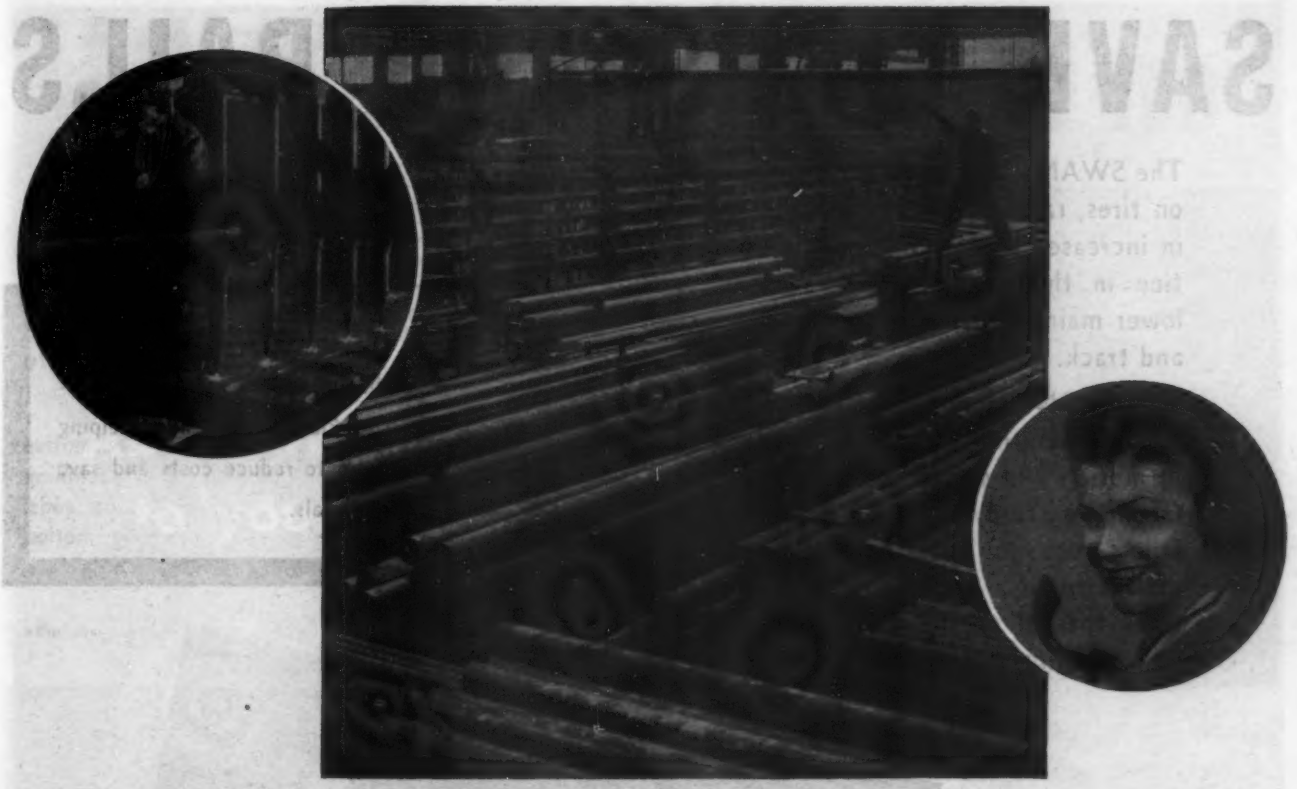

4 Things to Know About Steel

1. Where to Find Largest Stocks—The thousands of kinds, shapes and sizes of steel in eleven Ryerson Steel-Service plants are still the largest, most complete stocks available anywhere. This means that, despite shortages in some sizes, you can be more certain of getting the steel you need from Ryerson.

2. Technical Service—For more than 100 years Ryerson has supplied steel for the railroads. During that period, Ryerson technical men have gained much practical experience about the best type of steel for each application in the railway industry. This service is available to you on any problem of selection or fabrication.

3. Fast, Accurate Preparation—Ryerson saves you time and expense—prepares steel to your exact specifications with modern, precision equipment. Facilities include high-speed hack saws and shears, batteries of flame cutters, punches—everything needed to cut steel to the size and shape you need in the shortest possible time.

4. Prompt Delivery—Whether you need a single piece of steel or many tons you'll get prompt action from the nearest Ryerson plant. Phone, wire, or write for any steel requirement. And if you do not have a copy of our latest Stock List and Steel Data Book, we'll be pleased to send one.

RYERSON SERVICE TO THE RAILWAY INDUSTRY INCLUDES:

Steel Bars, Mild Steel, Alloy, Stainless—Rounds, Squares, Flats—Hot Rolled and Cold Finished—Shafting, etc.

Structural Steel including I-Beams, Angles, Channels, Tees, Zees.

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The SWANSON Flange Oiler reduces wear on tires, rails, and switch points, resulting in increased locomotive availability, reduction in the number of derailments, and lower maintenance costs on motive power and track.

SWANSON Flange Oilers are 100% automatic, operating only when the engine is in motion and stopping when it is at rest. Of simple, sturdy construction, the Swanson Oiler requires practically no attention except filling. The oil delivery shoe confines the oil to the flange and prevents its spreading to the tread of the wheel.

Join the many roads who find that their thousands of Swanson Flange Oilers are helping them to reduce costs and save materials.

Illustration Showing 2-C-77-D Type Flange Oiler for Steam Locomotives

We manufacture flange oilers suitable for all types of steam locomotives and *Diesel switchers.*

THE SWANSON COMPANY

2522 W. Lawrence Ave. Chicago 25, Ill.

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ADDING TWO REVENUE PRODUCING CARS is no trick either: simply KILL the POWER PARASITES by installing the WAUKESHA TWINS—the Ice-Engine and Engine-Generator—for these services. Quiet, independent, self-contained, automatic, air conditioning and electric energy for every car. Its power source is propane, the ideal engine fuel—economical, efficient, reliable, safe.

No parasite power drag! No terminal stand-by problem! Entirely independent of train movement, car location or the locomotive.

Modern deluxe air conditioning and lighting for every car on demand—automatically—by the Waukesha independent engine-driven units. Ask any of the 25 major railway users.

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Save! LOW COST
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LONGER LOCOMOTIVE-RAIL AND WHEEL LIFE WITH

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Automatic
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- Completely automatic — insures efficient lubrication at all times with maximum protection to cylinders, valves, packing and reciprocating parts while engine is drifting.

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- Automatically relieves excess pressure in locomotive cylinders, preventing cylinder head blowouts and bent piston rods. "Cylinder Cocks" remain closed when locomotive is drifting, preventing pistons from sucking foreign matter into the cylinders.

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- In blistering hot weather or zero temperatures, the Ardco or Sesmo Rail Lubricator installed at the beginning of the curve at a point where the wheel flanges bears against the rail, assures a positive pick-up and even spreading of lubricant in sufficient quantity upon the side of the high rail curve.

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Awarded FIVE Army-Navy "E's"

ARDCO MANUFACTURING CO.
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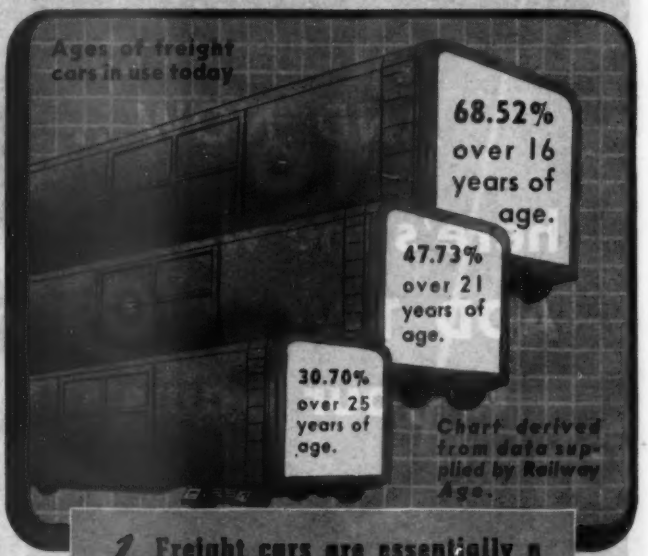
The Records Show.


Ages of freight cars in use today
68.52% over 16 years of age.
47.73% over 21 years of age.
30.70% over 25 years of age.
Chart derived from data supplied by Railway Age.

1. Freight cars are essentially a long-term investment.
2. Many cars now in use have passed sound investment age.
3. Many should be replaced *now* with up-to-date, longer-lasting cars.
4. RALSTON Freight Cars have stood the test of time.

● Specializing in quality freight cars for over 40 years, RALSTON is proud of the records achieved by hundreds of RALSTON-built cars on roads from coast-to-coast. RALSTON craftsmen have been equal to the demands placed on them by the nation's railroads, and now that peacetime rebuilding and replacing of outdated and obsolete rolling stock is *near — and urgent* — RALSTON is ready to give you plus-value in *tough*, built-to-take-it freight cars.

Every RALSTON car is built to your exact specifications, with a pride in workmanship that puts *added* value in every car. Dependable car parts are also available from RALSTON, the same rugged kind that go into RALSTON cars.

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Builders of Railroad Freight Cars and Repair Parts

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Radically different bonded fibre material adds lavish comfort, lasting beauty to upholstered products

Texfoam is not just a new brand, it is a brand new product which just about rounds out our line of sub-density upholstering and top padding materials.

Texfoam is immediately available for home furniture and it extends home easy-chair ease to train, bus or airplane, to restaurant booth or theatre seat. It will not bunch, shift, sag or cup and can be cut to shape, nailed, sewed or tufted with utmost speed and simplicity.

For more than twenty years *Spongex* molded arm rests, seat cushions and backs and *Spongex* slabs for top padding have been providing luxurious, economical comfort to users of all types of transportation: motor cars, buses and trucks, elevated and subway cars, boats, planes and trains—almost anything that travels on wheels.

Our rubberized curled hair product, *Texlock* which is currently available only for war uses, has made an enviable record as a packaging medium, providing protective cushioning for delicate instruments in transit to fighting zones all over the world.

There is no reason for continued use of old-fashioned fillers. By changing to *Texfoam* now you can improve product quality, step up sales and increase your profits. Write today for samples and full information. Sponge Rubber Products Co., 121 Derby Place, Shelton, Conn. Sales Offices: New York, Chicago, Washington, Boston.

*Trade Mark Reg. U. S. Pat. Off.

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SPONGE RUBBER PRODUCTS CO.

WORLD'S LARGEST MANUFACTURER OF CELLULAR RUBBER AND BONDED FIBRE PRODUCTS

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Railroad requirements call for more types and sizes of clamshell buckets than any other industry. Material to be handled, hook capacity, overhead and side clearances all affect the specifications.

Bulletin No. 1989 classifies, illustrates and describes the Blaw-Knox Buckets most widely used on America's principal railroads ... If it's up to you to select the right bucket for a particular job, Bulletin No. 1989 should be within easy reach... Your request will bring a copy by return mail.

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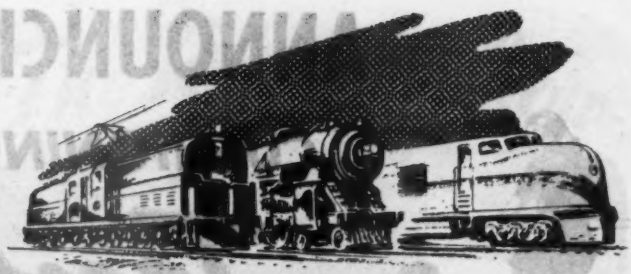

Here's what
RAILROAD MEN
should know about
Grinders

In railroad shops both for new construction and repair, grinding makes possible high finishes and close tolerances that are demanded today.

Landis Tool grinders make possible the high finish and close limits required on axles fitted with anti-friction bearings. Grinders provide the best answer for finishing the steadily increasing number of diesel engine crankshafts.

Other Landis Tool grinders are used for knuckle pins, cross head pins, rod bushings, air pump piston rods, valve rods. And still others for tool room grinding.

For a story on what Landis Tool grinders can do in a railroad shop, write for bulletin RR44.

LANDIS TOOL
Precision Grinders
LANDIS TOOL COMPANY • WAYNESBORO, PA.

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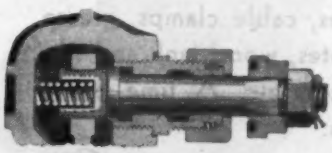
QUICK ACTION BLOWER VALVE

The quick action of the Type ASD Blower Valve is exceptionally desirable, particularly where strict smoke ordinances are in effect.

The full opening through the valve saves time when "blowing up" the locomotives as the unrestricted steam passage to the blower nozzle provides maximum steam discharge. Valve can be throttled when required.

Seats and discs may be furnished in hardened Stainless Steel or Stellite surfaced. Stem and bushing may be furnished of Stainless Steel.

Regularly furnished with standard inside packing (same as OKADEE Blow-Off Valves) or the valves may be equipped with outside packing arrangement as illustrated.



Please send for our new Bulletin No. 431— no obligation.

Cross section view showing stem assembly of valves equipped with outside packing. This stem assembly permits packing under pressure.

THE OKADEE COMPANY

332 SOUTH MICHIGAN AVENUE, CHICAGO

Better Be Safe . . . Than Sorry! Install JUSTRITE

Justrite Oily Waste Can

The approved safety can for oily, dangerous waste and other materials that offer an ever present hazard of fire and explosion. May be had with or without foot lever opener. Top closes automatically. The body is made of No. 24 gauge galvanized sheet steel, double seamed and soldered. Legs and handles are ⅛" band iron. Rugged : . : Efficient : : : Safe.

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Justrite Safety Gasoline Cans and Oily Waste Cans are standard equipment on many railroads because they provide the safe, practical and economical means of cutting fire and explosion hazards to a minimum. The Safety Gasoline Cans for shop work, 1-pint to 1-gallon, are equipped with "trigger" handles. Standard equipment for the 2-3-5 gallon size cans is a "swing" handle as illustrated.

When It's Safety Approved It's . . . Justrite

Justrite Oily Waste Cans and Safety Gasoline Cans are approved, inspected, and individually labeled for safety by Underwriters' Laboratories, Inc. and by the Associated Factory Mutual Fire Insurance Companies. Justrite provides the practical answer for the protection of men and equipment against fire and explosion.

Safety Gasoline Can

This heavy duty can is equipped with easy, natural opening devices. Cap closes automatically as soon as released. Strongly constructed of lead-coated sheet steel double seamed and soldered. No leakage . . . no waste . . . efficient . . . economical . . . and safe for handling and storing flammable and explosive liquids.

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APPROVED SAFETY ELECTRIC LANTERNS

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A & B Types for long surface wear. L W-37 or VIII for light weight sub-floor as base for ¼ thick surface of A & B Tucolith or as a base for cementing any type floor covering.

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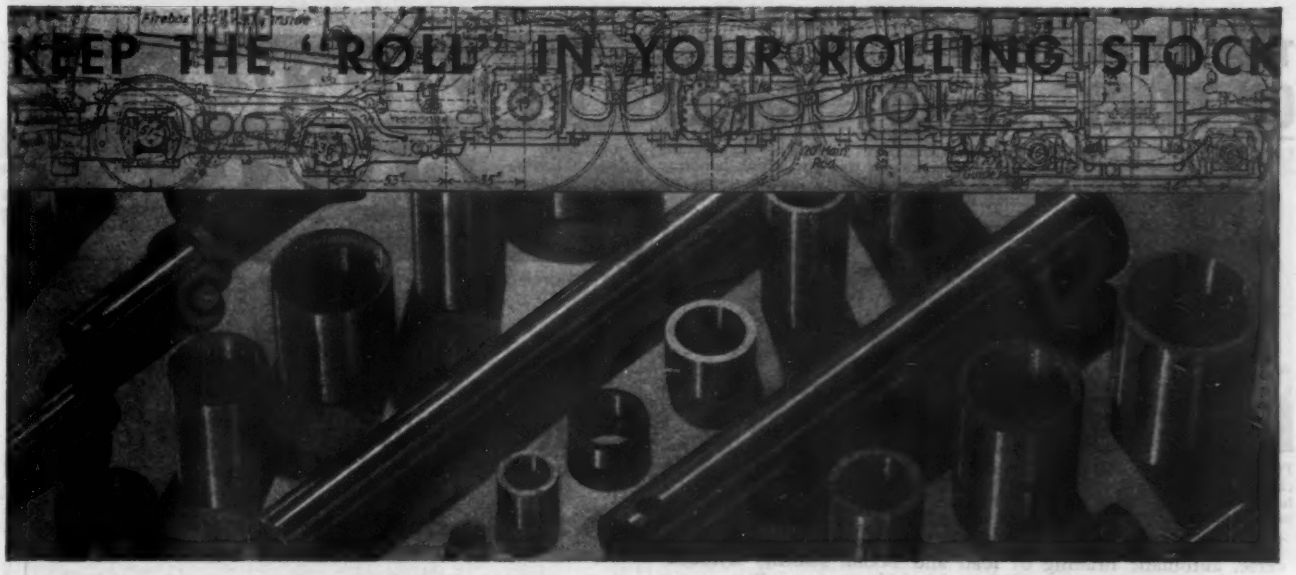

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Railroad Division — XLO — EX-CELL-O CORP., DETROIT 6

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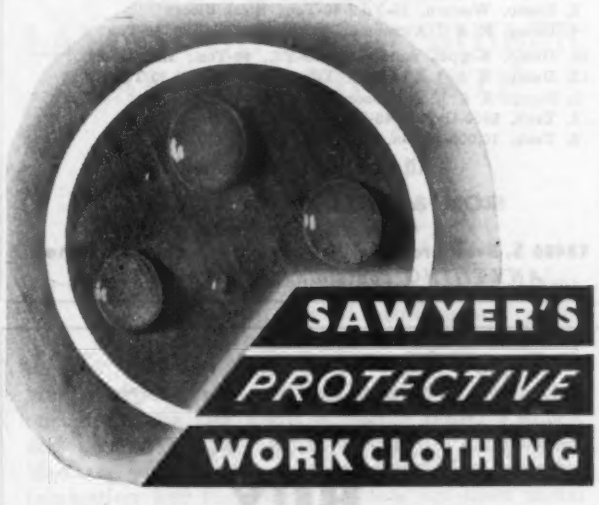

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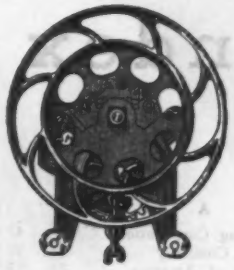

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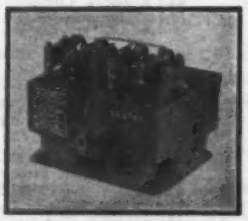

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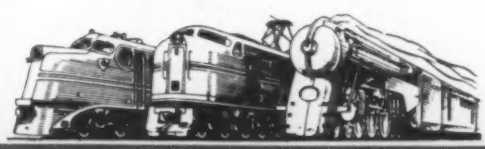

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